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The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE.

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No. 3192.—Vol. LXVI.

LONDON, SATURDAY, OCTOBER 24, 1896.

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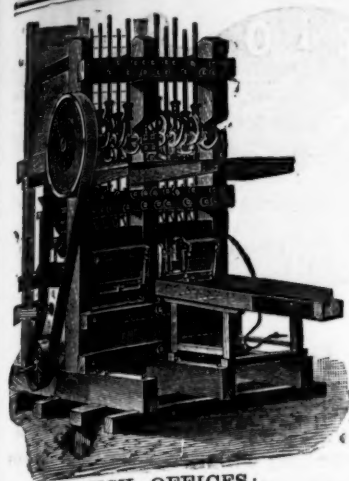
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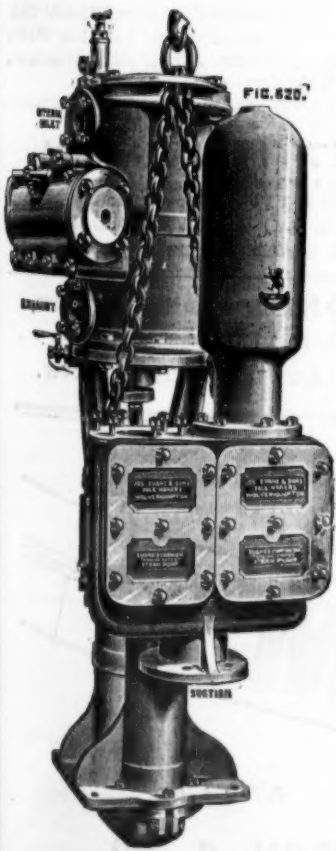


FIG. 820.

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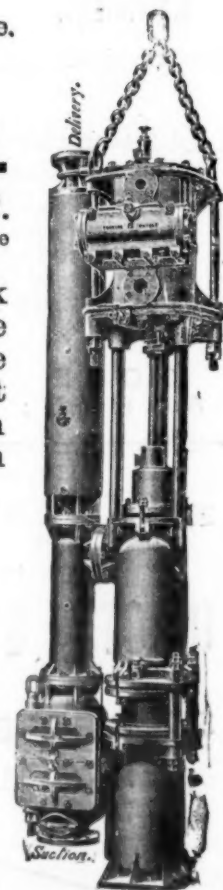
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FIG. 875, "FLUOMETER" PATENT STEAM VACUUM PUMP.

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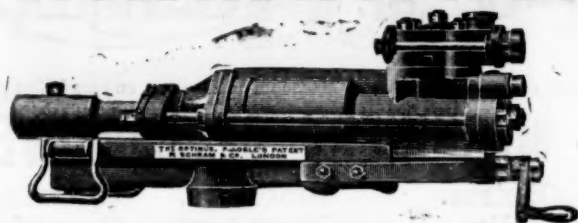
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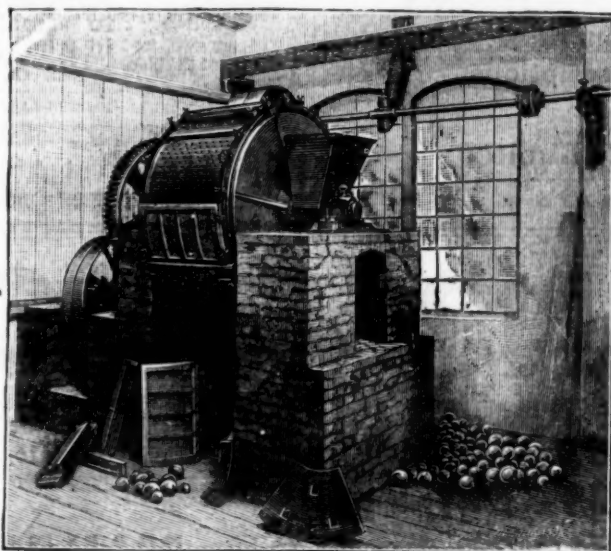
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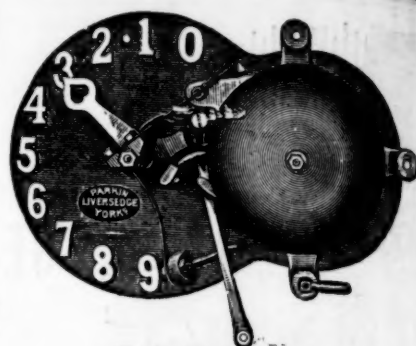
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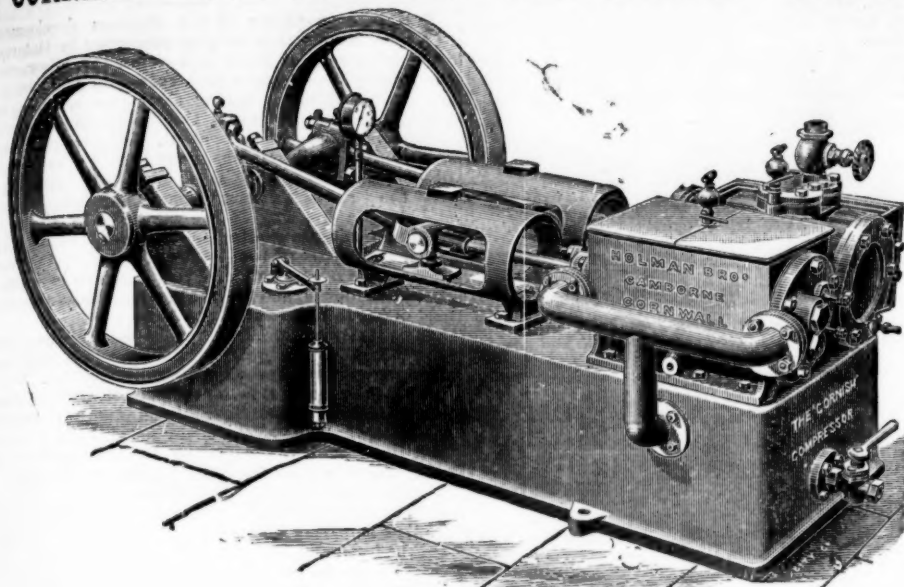
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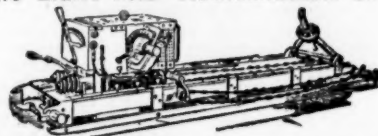
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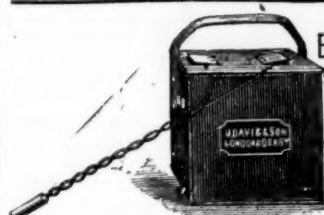
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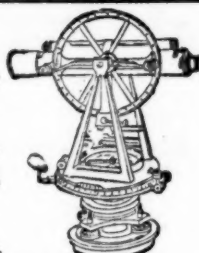
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A HIGH CLASS UNIONIST NEWSPAPER.

Specially devoted to Cornish Mining, upon which it contains the fullest and most reliable information published. It is the only eight-paged newspaper printed in the Mining Division of Cornwall.

ISSUED EVERY THURSDAY AND SATURDAY,
PRICE ONE PENNY.

The Cornish Post and Mining News Co. (Limited)
East Charles Street, Camborne, Cornwall.

AWARDS: CRYSTAL PALACE, 1890; TASMANIA, 1891; KIMBERLEY, 1892.

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In the CLARKSON-STANFIELD process of Concentrating Refractory and Complex Ores no water is required; dust is reduced to a minimum; the loss of Mineral through water-borne Slimes is obviated.

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The Machine is superior to Sieves for Sizing Homogeneous Substances, such as Emery, Sand, and Powders, and may be used to great advantage in the preparation of Ochre.

NB—The owners of the Carndochan Mine, near Bala, North Wales, will, by arrangement, show their CLARKSON-STANFIELD plant working on a Refractory Low Grade Gold Ore.

NEW PATENTS.

LIST OF APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs Rayner and Company, Patent Agents, 31, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

- 1197 George Payne Grace, 181, The Grove, Camberwell, London.—Improvements in steam tight packing for rotary engines.—October 2.
- 1198 William Thorne, 4, Clayton Square, Liverpool.—Improvements in motive power engines.—October 5.
- 1200 Edmund Woods, Imperial Chambers, Albert Street, Derby.—Improvements in and relating to marine or propeller engines.—October 5.
- 1201 Carl Bayer, 4, South Street, Finsbury, London.—Improvements in rotary engines.—October 5.
- 1202 Louis Clark McAdam, 70, Wellington Street, Glasgow.—Improvements in engines.—October 5.
- 1204 Alois Hora and Jan Zemelcek, 111, Hatton Garden, London.—Improvements in valve gear for steam engines and the like.—October 6.
- 1205 John Graves Pike, and Robert William Wright, 4, South Street, Finsbury, London.—Improvements in steam engines.—October 6.
- 1206 John Thom, 15, Water Street, Liverpool.—Improvements in or connected with steam engines.—October 8.
- 1207 Merchant Stoddard, and Charles Haines Scott, 111, Hatton Garden, London.—Improvements in ore concentration.—October 8.
- 1208 John Henry Tangey, and William Johnson, jun., 7, Staple Inn, London.—A new or improved steam engine.—October 8.
- 1209 Henry Harris Lake, 45, Southampton Buildings, Chancery Lane, London.—Improvements in furnaces chiefly designed for steam boilers.—October 8.
- 1210 Frederick Hamer, 18, Southampton Buildings, Chancery Lane, London.—A new rotary engine.—October 8.
- 1211 William Phillips Thompson, 6, Lord Street, Liverpool.—Improved process for extracting metals.—October 8.
- 1212 John Arms rong, Springfield Park, Acton, London.—Improvements in the extraction of lead, zinc, gold, silver, and other metals from sulphide refractory or other ores or matters.—October 9.
- 1213 Robert Russell, 1, 5, St. Vincent Street, Glasgow.—Flame conductor and smoke burner for tubular stoves.—October 9.
- 1214 George Cooper, Gresswell, near Mansfield.—A mine's lamp spring book.—October 9.
- 1215 William Phillips Thompson, 6, Lord Street, Liverpool.—An improved generator furnace.—October 9.
- 1216 John See, 6, Lord Street, Liverpool.—Improvements in or in connection with steam pumps.—October 9.
- 1217 William George Cass and James Tonge, 5, John Dalton Street, Manchester.—Improvements in hydraulic apparatus for mining apparatus.—October 9.
- 1218 Thomas Lane, 154, St. Vincent Street, Glasgow.—Improvements in machines for crushing.—October 10.
- 1219 Simon Soler, 77, Chancery Lane, London.—Improvements in steam boilers.—October 10.

Mr. F. W. H. HORNE, the representative of the New Zealand and Globe Exploration Company (Limited), arrived in Wellington, New Zealand, on the 18th inst.

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

Estates and Finance Corporation of Australia (Limited).—Registered October 30 by Chancery and Son, 1, Great Winchester Street, E.C., with a capital of £100,000 in £1 shares, to adopt and carry into effect an agreement expressed to be made between G. P. Dolette of the one part and this company of the other part, to acquire mines, mining rights, &c., in Australia and to develop, work, deal with and turn to account the same, and further to acquire any mines, mining, water and other rights, grants, leases, claims, concessions, options of purchase, metalliferous land, &c., in any part of the world.

East Hannan's Brownhill Consols (Limited).—Registered October 13 by Chancery and Son, 1, Great Winchester Street, E.C. Capital £200,000, in £1 shares. Objects: To acquire mines, mining, water, and other rights and auriferous land in Western Australia, or elsewhere in Australia, and any interests therein, and to smelt, dress, refine, and prepare for market and deal in auriferous quartz and ore, and other mineral substances, bullion, specie, coin, and precious metals and stones, and to carry on the business of a mining and metallurgical company.

Mount Magnet Golden Crown (Limited).—Registered October 13 by S. E. Preston, 17, Old Swan Street, E.C., to substitute, enter into, carry on, assist or participate in financial, commercial, mercantile, industrial manufacturing, mining, and other businesses, works, contracts and undertakings, and financial operations; to examine and explore mines and ground supposed to contain minerals or precious stones, and, in particular, to search for and deal in gold, silver, &c. Registered office, 56, Bishopsgate Street, E.C.

Anglo-foreign Investment Corporation (Limited).—Registered October 10. Capital £25,000, divided into 19,900 £1 ordinary and 700 1s. deferred shares. Objects: To carry on business as bankers, financiers, company promoters, &c.

Great Boulder Leviathan Gold Mining Company (Limited).—Registered October 9. Capital £100,000 in £1 shares. Objects: To acquire mines, mining rights, &c., in Australia or elsewhere, and to work and turn to account the same.

Duncan Syndicate (Limited).—Registered October 13. Capital £5000 in £1 shares. Objects: To acquire, develop, and turn to account concessions and contracts relating to property of all kinds.

COAL FROM DEAN FOREST.—According to the 74th report of the Commissioners of Her Majesty's Woods, Forests, and Land Revenues, it appears that the mineral royalties of the Forest of Dean for the year ending March 31 last amounted to £12,332 10s. 8d. The receipt for the preceding year to March 31, 1895, was £10,863 6s. 6d. The last two years have been under the average of the last 10 years, which is £13,302 8s. The Commissioners state that considering the extremely dull state of the coal trade generally, it is gratifying to find that in the Forest of Dean the output has been considerably increased as compared with the preceding years. The output of coal on which the Crown received royalties in the year was 874,182 tons, and in the preceding year 783,814 tons.

CONTRACTS OPEN:

FOR MINE, QUARRY, RAILWAY, AND ENGL. NEERING WORK, STORES, &c.

* We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

Ironwork, October 26 (Hyde).—For the supply of ironwork, manhole tops, &c., for ensuing 12 months, for the Hyde Corporation. Particulars can be obtained from Mr. J. Mitchell, borough surveyor, Hyde. Sealed tenders, endorsed "Tender for Ironwork," to be delivered to Mr. George Stevens, town clerk, Town Hall, Hyde, by noon on 23rd inst. Preference will be given to those persons or firms tendering who pay to their workpeople the regular standard of wages obtaining at the time in the borough or district.

Firewood, October 27 (Epsom).—For the supply of 75 fathoms of yellow deal or batten ends suitable for splitting up for firewood, to be delivered by the contractor, free of expense, at the workhouse, Epsom, at such time or times and in such quantities as the workhouse master shall direct, for the Guardians of Epsom Union. Tenders, stating price per fathom, must be delivered at the office of Mr. W. O. Reuter, clerk, Epsom, before 4 p.m. on 27th inst., marked outside "Tender for Firewood."

Reconstructing Bridge, October 27 (Burnley).—For the reconstruction of bridge carrying the railway over Curzon Street, Burnley, for the Lancashire and Yorkshire Railway Company. Plans and specifications may be seen, and quantities, with forms of tender, obtained on application at the Engineer's Office, Hunt's Bank, Manchester. Tenders, endorsed "Tender for Reconstruction of Bridge, Burnley," to be in the hands of Mr. C. W. Bayley, secretary, Hunt's Bank, Manchester, by the morning of 27th inst.

Railway Carriages, October 28 (London, E.C.).—For the supply and delivery of 10 third-class carriages for His Highness the Nizam's Guaranteed State Railways Company (Limited), as per specification, to be obtained at the company's offices, 25, Winchester House, 50, Old Broad Street, E.C., for the sum of 1000, which amount will not be returned. Tenders to be addressed to the managing director, marked "Tenders for Third-Class Carriages," by noon on 28th inst.

Railway, November 4 (Vienna).—For construction and bridge work on the Vienna City Railway, for the Austrian State Railways. Four contracts, in the aggregate nearly £100,000.

Bridge, November 4 (Cagliari, Sardinia).—For a three-span iron viaduct over the Flumendosa (mountain torrent). About £2,000. Particulars at the Prefecture at Cagliari, or the Italian Ministry of Public Works, Rome.

Railway, November 8 (Sofia).—The Sremskog and Novi Zigr railway contract, of which various particulars have appeared, is now advertised for November 8 as the date of sending in tenders. Application should be made for particulars to the Bulgarian Ministry of Public Works at Sofia.

Coal, November 30 (Cairo).—For the supply of Newcastle coal and also coke for the Government hospitals during the year 1897. Application must be made to the Chief Storekeeper of the Military Service at Cairo, and tenders must be on stamped papers, and quote the prices in Egyptian money.

VEIN WALLS.*

By T. A. RICKARD, Denver, Colorado.

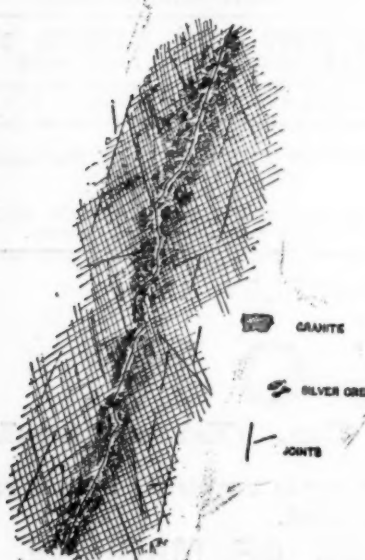
(Continued from page 1310).

RARELY is a story told more clearly than in the ripple-marked footwall which was to be seen in October, 1891, in the Johnson's Mine at Bendigo. It had been very difficult to distinguish the bedding of the country because the development of a strongly marked cleavage had obliterated the lines of original sedimentation. At the 1065 feet level, however, the matter was made plain. For more than 100 feet square the surface of the footwall was covered with ripple-markings. The crests of the waves were about 3 inches apart, and presented all the little irregularities to be seen to-day when the wind blows over the shallow waters of an estuary, and imprints the evidence of its action upon the yielding sand. The markings had been protected by layers of Silurian sediment, and the whole series had been indurated into rock, the sand which bore the markings becoming quartzitic sandstone, and the overlying mud slate. Between them, as within the pages of a book, was preserved the conclusive evidence of the original position of the beds of rocks enclosing the reef, which had been formed in later times, when fissuring had made room for the circulation of underground waters and the deposition of the gold-bearing quartz.

In the above interesting case the corrugation of the footwall, due to the ripple-markings, rendered difficult the detachment of the ore. Distinct walls, when accompanied by selvage, are very useful in actual mining; but they are not by any means necessarily indicative of a productive vein, or particularly favourable to the continuity of the ore. A "clean" wall and a good "gouge" are welcomed by the miner because they ease his toll; but the idea that their presence alongside a lode gives it a character better than another unprovided with such adjuncts is a dangerous delusion. In many mines more ore has been lost through the persistent following of a "wall," without exploring beyond it, than was ever compensated for by the greatest facility given by such a parting-plane for the breaking of the ore found.

Many veins have no defined walls, but gradate imperceptibly into the enclosing country, and are bounded only by the commercial value of the material mined. Such veins are to be seen, for instance, in the mountains that overlook Silver Plume, Clear Creek County, Colorado. Fig. 12 represents a sketch made May 27, 1892, from the

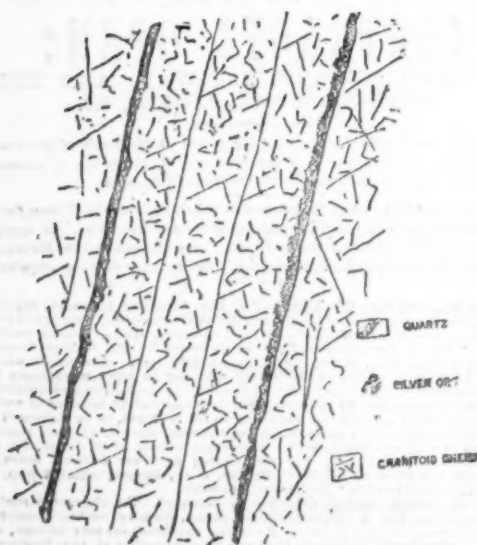
Fig. 12



300 feet level of the Seven-Thirty Mine. A fracture penetrating the metamorphic granite carries ore on both sides, which diminishes in richness as it spreads into the enclosing country. The joints in the granite are evident.

In this mine the so-called walls are often simply two parallel veins (rich, but very small), separated by clean, hard country. This is illustrated in Fig. 13, which was obtained from the same level

Fig. 13



about 1000 feet further east. The granitoid gneiss is traversed by two streaks of ore, of which the one to the right is much the richer. Between them there are at least two well-marked parallel fractures devoid of ore. The vein to the left has a thin selvage, under which there is a streak of quartz carrying a little silver ore; but the companion vein to the right follows a fracture unaccompanied by any selvage whose upper side is impregnated with about 3 inches of tetrahedrite, galena, and polybasite.

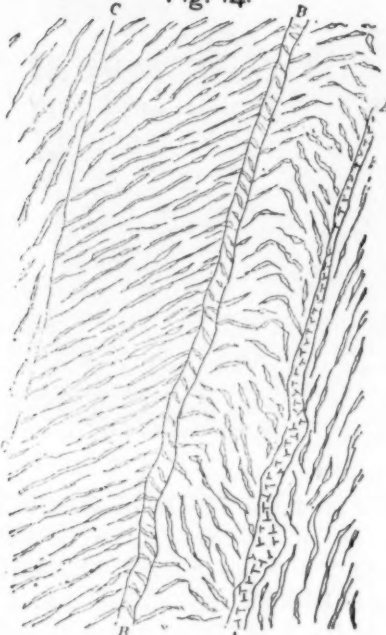
Where ore is absent in the Seven-Thirty Mine, the walls are apt to be particularly well-defined; and when there is any thickness of rich silver-bearing mineral present the walls are scarcely to be distinguished, and the rock is hard to break because it is destitute of convenient partings. The large veins carrying gouge are found to be uniformly poor, except where they meet the very narrow rich streaks which constitute the resource of the property. The Seven-Thirty vein proper is only 2½ inches thick, but it is very persistent

through the midst of hard crystalline rocks, and it has, for 20 years, proved very productive.

In many mines one vein only is exploited, and crosscutting the country in search for parallel lodes is entirely neglected. In others a crosscut is stopped as soon as it reaches the further wall of the particular vein it was started to reach. Both these unwise practices are founded upon a misconception of lode structure, due to a narrow interpretation of the early teachings of economic geology, which lays a misleading emphasis upon the definition and clean cut boundaries of so-called true fissure veins. The fact is, as daily observation proves, that there are walls within walls, and walls beyond walls; and that to follow closely any particular hard, smooth rock surface, with the idea that it is the utmost limit of ore occurrence in any particular mine, is to be blind to the realities of geological structure.

Fig. 14 represents the face of a drift,* in the Canton Mine, near Wairopi, Otago, New Zealand. A A is the reef, a vein of quartz which is supposed to lie immediately upon the footwall. Along B B

Fig. 14.

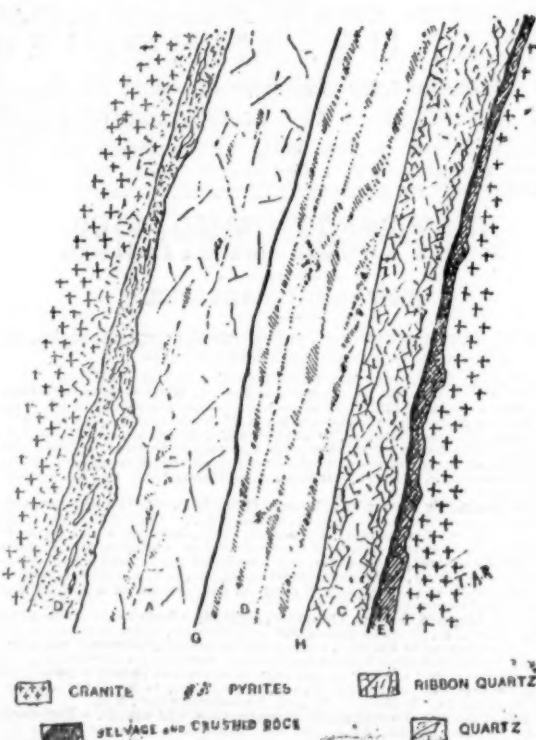


CANTON MINE

the quartzose schist is soft, and the included quartz folia are much twisted. C C is one of the so-called false hanging walls. Along A A and C C faulting is evident, along B B distortion only. It was not possible to say where the lode ended or where it began. The whole width from A to C was known to be gold-bearing, although A A served as a guide in following the gold-bearing channel. Nevertheless, those who were working the mine had little comprehension of the formation, particularly of its essential lack of definition, and, while admitting that there were several false hanging walls, insisted that there was only 1 footwall (underneath A A) which was stated to be of a different kind of rock, and exceptionally hard. On examination I found that the rock of the supposed footwall was similar to that of the rest of the gold-bearing country forming the lode, and on a sample of it being crushed and tested in a prospector's pan it was discovered to be richer than that which was being actually mined. It was scarcely necessary after that to insist that a crosscut should be made into the footwall.

Fig. 15 represents the north breast† of the lower level on the main lode in the Union and Companion Mine, Union County, Oregon. It illustrates the occurrence of walls within walls, for

Fig. 15



while the lode may be limited by the main boundaries along E and D, there are at least two partings (G and H) equally well defined, subdividing the enclosed width of ore. The country is a fine-grained granite, which, near the hanging, is decomposed and ore bearing. D is a streak of granular crushed country, mixed with lenticles of white quartz whose longer axes are parallel to the lode walls. D is from 3 to 7 inches wide, and carries only traces of gold. A consists of white hackly quartz spotted with iron pyrites. It is from 14 inches to 2 feet wide, and contains about ½ ounce of gold per ton of ore. Then comes a hard regular wall, separating A from B, which is the main pay streak, ribboned with veins of iron and copper pyrites. The width is from 2½ to 3 feet, and the ore averages about 2 ounces in gold and 8 ounces in silver. Then follows a parting marked by a slight selvage, underneath which comes a 10 to 15 inch band (C) of ribboned white quartz, stained by the oxidation of

copper pyrites and carrying about 5 dwts. of gold per ton. This comes the main footwall with its streak, 1 to 3 inches thick, of granular altered. The underlying rock is but little altered.

(To be continued.)

GOLD MINING IN ONTARIO.

(FROM OUR OWN CORRESPONDENT.)

AS a consequence of the vigorous development of the numerous gold mining properties in Ontario, and the discovery of many rich veins, the lukewarmness that characterised the public with regard to gold mining is on the wane, and although mining shares are not being bought so rapidly as the richness of the various mines warrant, yet a decided improvement is apparent. With regard to the business of conversation, gold mining seems to be the general topic to the subject, new companies are being formed, and stock and share dealers are doing a thriving business. Mining engineers and prospectors are flocking here from all parts, and many of the former assert that they have seen in Ontario more and better paying ore than in South Africa or British Columbia, and are of the opinion that Ontario is "the" field of the future.

Recent prospecting has brought to light the existence of a true fissure vein of great continuity, which can be traced from the outcrops on the property for fully 2000 feet. The discovery was made at Hawk Bay, on the Seine River, and about 5 miles from the Saw Bill Lake Gold Mining Company's property at Saw Bill Lake, whose shares are now quoted at \$2.25. A company under the title of the Hawk Bay Gold Mining Company (Limited) has been formed to work the property, the capital being \$150,000, in shares of \$1 each. The directors consist for the most part of those who have been largely identified with the success of the Saw Bill Lake Company. The assays average \$20 per ton, and the low capitalisation of the company, taken in conjunction with the strong indications of the presence of a large body of rich gold-bearing quartz, warrants the expectation of large annual dividends.

Another rich deposit of the precious metal has been found in Hastings County, at the Delora Mine, which is situated about 3 miles from Marmora. Nearly 100 men are at work, and a 50 stamp mill is now in course of erection. Several large sample shipments have been made to England. The company is said to have \$6,000,000 behind them, and are bonding all the land around them to the extent of 1600 acres. The ore has paid \$14 and \$18 in pure gold.

At Bannockburn, in the vicinity, another large company is securing land, and will commence operations next spring, and at Madoc, where gold was first discovered in Ontario in 1866, a very valuable deposit has been discovered, almost within the town limits, the assay of which yields \$20 in gold and \$20 in cobalt and nickel.

It is a general opinion held by mineralogists that coal does not exist in Ontario, but numerous reputed finds of coal have been reported from Algoma, in North-Western Ontario. A company is being formed to work the supposed beds, and should the deposits prove bona fide it will greatly facilitate the working of the rich gold mines in Northern Ontario.

THE SO-CALLED DRY PROCESSES.

By Captain C. O. LONGRIDGE, M.F.I.M.E., M.I.M.E., &c.

THE term "dry" applied to certain processes recently introduced is an attractive but fallacious misnomer. The methods of gold extraction classed under this heading are by no means dry, nor can they be said to be altogether new; but, in the main, resuscitated methods designed to deal with ores when water is deficient. More properly speaking, they are water-economising processes, and as such labour under certain difficulties not yet overcome. Even with absolutely free milling gold and clean gangue, these difficulties, though reduced, are not eradicated, while with the presence of base metals they are very greatly increased. It is a favourite dictum of patentees that solutions not exceeding eight parts of cyanogen to 1000 parts of water—that is, 2 per cent. solutions of cyanide of potassium are selective in their action; in other words, that they dissolve the gold and silver in an ore without attacking the base metals that may be present. This assertion, however, does not appear to be altogether borne out by facts, for solutions of ½ of 1 per cent. or less of potassium cyanide are found to dissolve, with the greatest facility, compounds of some of the base metals, especially those of copper, zinc, manganese, &c. Fouling, therefore, if water be not continually added to the solution that these so-called dry processes propose to use over and over again would in the case of most ores be quite unavoidable; and here appear the difficulties. The evil effects of fouling not only entail chemical losses of cyanide, in some cases so heavy as to render the process commercially valueless, but have other disastrous results. On the one hand, as the solution becomes foul its extractive power becomes weakened. Nor can this be restored by adding fresh cyanogen to maintain the normal percentage. For the thickening of the solution by re-use exercises a damaging effect not counteracted by the fresh potassium cyanide. It has, in fact, been ascertained that the rate of dissolution of gold in cyanide solution decreases as the viscosity of such solution increases, and as the absorption coefficient decreases. This is an impediment difficult to remove. It can probably be successfully dealt with only by a very perfect system of filtration, purification, and re-aeration. This rather vitiates the simplicity of the process, nor can it be effected without loss of time, money, and water. But there is yet another difficulty. Gold and silver contained in fouled solutions are imperfectly precipitated in contact with zinc. The precipitant frequently becomes covered with an incrustation impeding the chemical action to such an extent that, when the solution has been used a few times, it will probably leave the zinc boxes almost as rich as it entered. Possibly electrolytic deposition may be found more efficacious. All these facts were perfectly well known beforehand, and companies that have had recourse to these processes can scarcely be surprised that the results have not been altogether successful. Perhaps their shareholders derive some consolation from knowing that they are paying for useful experimental work that may, perhaps, some day, solve the difficulties of the so-called dry processes.

LIGNITE MINING IN SAXONY.—During last year 12 new lignite mines were opened in Saxony, while operations at eight old pits were suspended. The total number of mines in operation in the kingdom at the commencement of 1896 was 106. The total production of lignite in Saxony during last year amounted to 1,018,426 tons, as compared with only 918,589 tons in 1894.

* A Paper read before the American Institute of Mining Engineers.

† On November 15, 1890. See also Trans., XXI., 415

‡ On June 20, 1895.

MINING IN VICTORIA.

THE VICTORIAN MINES' DEPARTMENT TO BE REPRESENTED IN LONDON.

(FROM OUR OWN CORRESPONDENT.)

REFERENCE has frequently been made in *The Mining Journal* to a class of operations purely of a scheming and speculative character, and the initiatory steps taken to attract English capital into the same. Seeing that the matter had become one of vital interest to the colony, it will be remembered that a few weeks ago a member of the trusted and best consulting mining engineers met in Melbourne, and discussed a scheme respecting these proceedings with the view of forming a Mines Reporting Association in London. The Minister of Mines (Mr. H. Foster) was consulted on the subject, who at once saw the vast importance of the principles which the facts established, which are too apparent to escape the observation of the most inexperienced; but, believing that an official representative of his department would have more influence in England than a private body, he promised to direct inquiries to ascertain the best way in commencing with the suggestions made. Mr. Foster was frank to

prominent position. Born in Victoria in 1852, he is, consequently, 44 years of age. In the year 1873 he entered the Lands Department as a draughtsman, and was subsequently engaged in the Trigonometrical and other Government surveys of the colony, chiefly in the mountainous districts of Gippsland. His love of exploration, by which he obtained exact information regarding the topography of that region, soon gained him distinction, for in 1878 he was appointed acting district surveyor and land officer, performing administrative, professional, and judicial functions. In executing the triangulations necessary to his work he became inured to hardship, and revelled in the study of geology, mapping very carefully that portion of Gippsland in which lay the gold fields, which obtained for him more substantial recognition by the authorities of those times, transferring him to the Mines Department as Assistant Government Geologist. In this position, as second in command, Mr. Stirling has displayed great energy and ability; the development of the Victorian coal fields being largely due to his skill in selecting judicious sites for boring operations, and for carrying out geological surveys. He has not only a thorough knowledge of the condition of the mines throughout Victoria and of the geological formations of the country gained by practical surface and underground surveys, but he possesses the rare gift of being able to impart that knowledge as a popular lecturer. The colony is indebted to him for the establishment of many important scientific institutions, for, notwithstanding his numerous public duties, he finds time to give voluntary lectures on mining and geology. It is owing to his efforts that a great impulse has been given to geological studies in this country. A few months ago he was entrusted with the superintendence of an elaborate system of experiments carried out in connection with underground temperatures on the Bendigo gold field. Mr. Stirling has been specially selected for the position, because of his warm and enthusiastic and red tapeless interest in the work committed to his charge; both in field and departmental duties he has shown great capacity in initiative and organization, and nowhere were these talents more shown than in the large amount of work he has accomplished in the mining and underground surveys on the principal gold and coal fields of the colony. Among the numerous well-known papers and reports which he has written are the following:—

In the departmental publications. Geological Reports on Mount Bogong, Mitta Mitta Valley, Big River Valley, Tambo Valley, Dead Horse Creek, Livingstone Creek, Benambra, Noyong, Mitta Mitta Tableland, Omeo, Bald Hill and Long Gully, Dookie district, Wombat Creek caves and valley, Limestone Creek marble beds, Buchan Caves (with illustrations).

Mining Reports.—New Rush Creek, Nowa Nowa, Mitta Mitta, Howqua Valley, the stanniferous drifts, Agnes River, the tin lodes, Wombat Creek, Bendoc, Bonang, St Arnaud, Live Horse Creek, Yow Yow Ranges, Gembrook, Rokeby, Foster district.

On Prospecting and Boring Operations.—At Haunted Stream, Shady Creek, Mitchell River, Croagalong, Towong, North-Eastern district, Granya, Bethanga, Cameron's Creek, Sulpit Creek, Harrierville; Livingstone Creek, Wombat Creek, Snowy River, Little Snowy Creek, Swamp Creek, Kiwa River, Dargo High Plains, Budgee Budgee, Beechwood district, Upper Thornton, Sailor Bill's Creek, Kevington, Castlemaine, Griffith's Point, Anderson's Inlet, Jeetho Valley, Granville, County between Leongatha and North Mirboo.

Reports on Coal Fields.—South Gippsland, South Warragul, Bass River, Powong, Yarragon, Korumburra, Jumbunna, Kilcunda, Outtrim, Coal Creek, Mirboo, Cape Paterson, Great Morwell's Company's Coal Mine, Strozlecki Coal Mine.

Reports on Brown Coal Discoveries.—At Mount Lookout, near Bairnsdale, Toongabbie district, Thorpdale, Avon River.

Reports on Coal Fossils.—Classification of the older marine Tertiary beds of Victoria; silver deposits and limestone beds, Waratah Bay. His most noted contributions to scientific societies comprise:—"Notes on the Physical Features of the Australian Alps," "Caves Perforating Marble Deposits, Limestone Creek," "A Geological Sketch Section of the Australian Alps," "Meteorology of the Australian Alps," "The Glaciation of the Australian Alps," "Flora of the Australian Alps," "The Cryptogamia of the Australian Alps," "The Physiography of the Australian Alps," "The Physiography of South Gippsland," "The Physiography of Croagalong," "The Physiography of Tambo Valley," "The Australian Alps as a Field for Settlement," "The Alleged Marble Deposits at Bindi," "The Bindi Limestones," "Geology of Mount Bogong and Mitta Mitta," "The Flora of Mount Hotham," "The Glacial Epoch in Australia," "Hydrology of the Mitta Mitta," "The Brown Coal Beds of Victoria," "The Mineral Wealth of Victoria," "Geology and Mining in Victoria."

Mr. Stirling's pre-eminent ability in carefully mapping the districts he traversed completed the information necessary to guide the prospector in search of mineral lands. One would think the above list of publications was enough for one man to do in a lifetime, but he still seeks to do more. Of course, it is hard to please everybody in the type of man to send home. Not a few critics in the local Press have clamoured for a kind of advertising Barnum, or an up-to-date showman, skilled in the arts of advertisement to be sent. Others again recommend the "artful dodger" type of company promoter, a man who can "pluck" the "pigeons" and "rook" the English "gulls," a man who will refer to Victoria as composed of "huge mountains and quarries of gold ore."

Scores of ventures have been sent home from here, which will fall like nine-pins to the ground, if the slightest inquiry is made concerning them, and it redounds to the credit of Mr. Foster, the Minister of Mines, in his effort to save the colony from a scandal.

There is room for millions of pounds to be invested in legitimate mining in Victoria; but it requires direction. It is notorious that out of all the Victorian mines floated during the last year or so in London, only a few miserable pounds, in dribs and drabs, come out to the colony in hard cash. Reams of scrip come, and that is about all. This is perpetuated in the name of mining, and called enterprise. Call it a "gamble," or a "swindle," if you like. We delude no one but ourselves in referring to it as mining. The plain fact of the matter is—Mr. Stirling is not being sent as a "fizzig" or a "putter-up" for market floats, and to some people on this side it troubles very much. The department, under the circumstances, was bound to entrust its honour solely to its own officers. Many would like to have seen Mr. R. A. F. Murray, the Government Geologist, selected. No one denies his claims, but there were many reasons why he should remain at his post. He has chosen to think otherwise, and tendered his resignation, to take effect at the end of the year. Everyone regrets

this. His services will be a loss to the colony. Mr. Stirling's mission is undertaken in the common interest of the colony and English investors alike. I, therefore, have the less hesitation in asking for him the fullest confidence and support of English capitalists and the mining and financial community generally.

NOTES FROM BRITISH COLUMBIA.

(FROM OUR OWN CORRESPONDENT.)

ALTHOUGH British Columbia and its mineral wealth are coming to be talked about a good deal in London, it is possible that many people are still somewhat hazy as to the particular locality of its chief mining centres, and of the way of approaching them. The two chief districts undoubtedly are Cariboo and Kootenay. The former lies some 200 miles north of the main line of the C.P.R., about the centre of the huge province, which is nearly as large as France. The latter lies in the extreme south-eastern corner, hundreds of miles from Cariboo. Kootenay, practically, is bounded on the north by the Canadian Pacific Railway, on the south by the International Boundary Line (49th parallel of latitude), on the east by the Rocky Mountains, and on the west by the Arrow Lakes. This latter is rather general than particular, because mineral is found on the west of them; but if a line be drawn from the C.P.R. to the International Boundary down the valley of the lakes, the whole of Kootenay proper will lie to the east of it. The important Trail Creek district, it is true, lies on the right bank of the Columbia River, of which the Arrow Lakes are only expansions, but the river there takes a bend to the east, and so brings the district within the line described above. A certain portion of Kootenay lies also to the north of the C.P.R. It is known as the Big Bend country, and consists of that great district entirely enclosed by the Columbia. This huge river rises in the Rockies in Eastern Kootenay, and flows north, crossing the C.P.R. at Golden, and then, after embracing the Big Bend country, flows south, crossing the railway again at Revelstoke. This latter is the main gateway of the Kootenay on the north. It is a station on the main line of the C.P.R. From Vancouver a short branch line leads to Arrowhead, a point at the northern end of the Upper Arrow Lake. Here some of the best appointed inland steamers in the world convey passengers down the lakes and river right away into the United States, 250 miles and more. No one coming to Kootenay need fear having to rough it. The comfort of the Canadian Pacific trains is well known, the steamers of the Columbia and Kootenay Navigation Company, which ply everywhere, are modern boats of the river steamers type with powers of steaming up to 17 knots. A journey down the Arrow Lakes in the *Nakusp* is alone worth the journey, and after leaving Arrowhead the north-east arm of the lake is passed on the port hand. This leads into the Lardeau country, in which English companies are operating. Further down on the same side are the Halcyon hot springs. Here a comfortable hotel has been put up, and is largely patronised by miners who suffer acutely from rheumatism. Further down again, still on the port, or eastern side (we are travelling south all the time) is Nakusp. From here a railway (still the C.P.R.) runs to Sandon, in the heart of the great Slokan country, passing New Denver, its capital, situated on Slokan Lake. Although it has nothing to do with mining, a passing remark may be allowed that New Denver is one of the most beautifully situated towns in the world, and for magnificence of scenery can hold its own easily with anything in Switzerland.

Passing Nakusp, the steamer enters the Narrows, as the Columbia is called between the two lakes. Here is Burton City, at the mouth of Cariboo Creek, up which are some valuable claims. The Narrows run for about 25 miles, when the Lower Lake is reached. Mineral has been discovered on both shores—notably, at Deer Park, on the south-east. Just below Deer Park the river is entered again and Robson is reached. Here a short line of railway runs to Nelson, the capital of Kootenay. Nelson is on the outlet or west arm of Kootenay Lake, and has deep-water communication with fine service of steamers to Kaslo, whence the Kaslo and Slokan Railway leads to Sandon, Pilot Bay, Ainsworth, and away up the Lake and Kootenay River to Binner's Ferry, a station in Washington, on the Great Northern Railway. From Nelson a direct line, the Nelson and Fort Sheppard Railway, leads straight to Spokane, 200 miles distant. As Revelstoke is the main entrance to the north, so is this line the main gateway from the south, and connects Nelson directly with all the railway systems of the United States. The Kootenay River joins the Columbia just below Robson, but is too rocky for navigation, though it affords excellent sport to the angler.

Continuing the journey down the Columbia, now bending to the east, the steamer reaches Waterloo landing. Here the Lillooet, Fraser River, and Cariboo Gold Fields (Limited) has bonded large groups of claims, and has also established a town site, called Montgomery. Further down on the left bank are Champion and Bear Creeks, both with valuable claims, and on the right is Murphy Creek. A mile or two further and on rounding a point, the tall chimneys of the Trail smelter pour their clouds of smoke aloft from a commanding position on the right bank of the river. At the foot of the Bluff, on which the smelter stands, is the town of Trail. Rosland, the marvellous new born town, is 7 miles up the valley, and is connected by a narrow gauge railway with Trail. The line has to climb 2500 feet to get to Rosland, and so it has to wind about for 12 miles to get there.

After leaving Trail the river bends south again and passes Waneta, a station on the railway from Nelson to Spokane. Here the boundary of the British Dominions is reached, and the river flows on, still navigable, a dozen miles more to Northport, another station on the same line. On the American side this railway is known as the Spokane Falls and Northern, but there is no break in it, and through trains run daily between Nelson and Spokane. From Northport a branch line is being constructed direct to Rosland. It is expected that it will be finished in a few weeks.

The portion of Kootenay here described is West Kootenay. It is divided from East Kootenay by the main range of the Selkirk mountains. In the latter there are valuable mines, of which more will be heard when railway communication is available, but at present West Kootenay contains all the mines of which people are talking.

There appears to be some probability that the present Liberal Government of Canada is just as favourable to the construction of the Crow's Nest Pass line as its predecessor. This railway will start from Lothbridge, on the east side of the Rockies, and come west through the Crow's Nest Pass, by the south end of Kootenay Lake to Nelson. This is the route which the main line of the C.P.R. should have followed at first, as it is free from snowslides and avalanches which are at present so troublesome.

Kootenay's production for 1896 to the end of September amounted to 75,000 tons, of which 65,000 were treated at the local smelters, producing 3800 tons of copper matte (with silver and gold) and 1000 tons of silver-lead bullion.



JAMES STIRLING, ESQ., GOVERNMENT GEOLOGIST.

recognise that the labours of those concerned in the matter, in particular, the support given to the movement by *The Mining Journal*—through its representative—had been beneficially felt, and suggested that the ultimatum should be left in his hands, that he would lose no time in selecting an officer of practical and scientific acquirements for filling the appointment.

Following quickly on his word, the Minister publicly announced that he had determined to dispatch Mr. James Stirling, the Assistant Government Geologist, to London.

It is not intended that he shall be permanently retained at home, but by way of experiment, 12 months has been mentioned as the duration of his stay. His commission will be on broad lines, generally to take steps to spread a knowledge of the mining resources of the colony, and especially of those fields which offer scope for the investment of capital. Mr. Stirling will take up his quarters in the business part of the City, probably in Cannon-street, and will there exhibit his maps and specimens. He takes samples of Gippsland coal with him.

Twice a week he will deliver lectures in some prominent hall on the quartz reefs and alluvial leads of the colony, and he will also give a series of lectures in the principal commercial centres of the United Kingdom, illustrated with lantern views. A part of his mission home will be to so organise matters in London that, in future, when information is required with regard to Victorian mining it will be readily available to those in search of it; in fact, this will be his principal commission. As President of the Geological Society of Australasia, Mr. Stirling will present the respects of this institution to the Geological Society in London, of which body he is a Fellow; and as secretary of the Australasian Institute of Mining Engineers, he is also commissioned to lecture before the parent institute in London, and the several associations of mining engineers in the province.

As representative of scientific societies in Victoria he will attend the meeting of the British Association for the Advancement of Science, and, in addition to his work in England, he will visit France and Germany to spread a knowledge of the mining possibilities of Victoria. Mr. Stirling will keep himself in touch with the mining journals of England and the Continent, and as the representative of the only English mining paper having a permanent abode in Victoria in daily touch with his labours, he naturally hands himself over to *The Mining Journal*, relying with confidence on our means of future usefulness to him, in accordance with a discriminating policy to encourage all legitimate mining enterprises. Without in the least claiming a preponderating share of credits to ourselves in awakening public interest to the necessity of sending home a representative, or in striving to diffuse in England a knowledge of the colony's resources, now that it is accomplished, I feel the personal responsibility, and believe it to be my duty, as far as means extend within the limit

assigned me, to give capitalists and others who may come in contact with Mr. Stirling some idea of the manner of man he is, and his complete mastery of the resources of the country, in a commercial and scientific sense, in particular Eastern Gippsland, scarcely known even in the colony itself, and to the outside world it is altogether a *terra incognita*. I shall accordingly proceed at once to give a short sketch of the life and work of the gentleman who has been honoured with this

GOLD MINING IN BRITISH COLUMBIA.

(Concluded from page 1330.)

Columbia and Kootenay.

TITLE, CROWN GRANT. Location on north-east side of Kootenay Mountain, 1½ miles north-east of Rosland. Owner, the Trail Mining Company. Stock, 2500 shares, at \$100 each. President, H. P. Mason, Frankfort, Kentucky; secretary, Geo. E. Milligan, Chicago, Ill.; superintendent, Martin King, Rosland. Besides these claims, this company owns the adjoining locations, the Tip-Top and Copper Jack. On the Columbia-Kootenay property, much prospect work has been done, disclosing by means of tunnels, shafts, and open cuts, the existence of an ore-bearing zone running north-east by south-west, dip 45° to 75° north-west through both claims, the rock on the surface heavily iron-stained, with decomposed masses of sulphide ore exposed, which proves to be (a) pyrrhotite, both massive, scattered through a hard fine-grained gangue with a little chalcocypite, and (b) more or less mispickel or arsenical iron ore; the surrounding country rock being diorite that may be found from very fine close-grained to typical coarse-grained rock, exhibiting distinct crystals in places of biotite mica. In the underground workings, as far as examination was permitted by the presence of water accumulated since suspension of exploratory work, which will be further prosecuted after the installation of the air compressor or plant, much of the ore appeared to be strung out in irregular laminae of sulphides, calcite, rock matter, and some quartz; but the relation, if any, of such arrangement to walls or planes of fracture could not be determined for the above reason. The ore also is found massive, or scattered through the gangue, or along many small cracks, as was clearly seen in a lower shaft where the sulphide was iron pyrites. At the north end of the Columbia claim a porphyry dyke that can be traced with almost a certainty for over two miles, 30 to 40 feet wide at the least, crosses the upper tunnel at its mouth, on a course running true north and south, but no radical displacement is yet apparent, and on both sides of the dyke solid sulphide ore has been found, while in one place a stringer of quartz was noticed between the dyke and the diorite. Two carloads of ore have been shipped to the smelters to determine its value, one carload from one part of the mine proving too low grade to be profitable under existing conditions, the other from another part yielded, it is reported, over \$50 in gold per ton.

Upon the south end of the Copper Jack claim, convenient to a stream of water, an air compressor plant is being put in place, to consist of a 30 drill Ingersoll-Sargeant compressor, and three 125 horse power boilers, whence air will be carried in a 6 inch pipe in two tunnels, 700 and 800 feet respectively, higher up the claims, and if further work warrants it a tunnel will be run a little above the plant. The value of plant to be about \$20,000. There is an abundance of good timber for fuel and mine purposes, and for transportation facilities the surveyed line of the S. F. and N. R. R. passes below the present workings, while a good wagon road from Trail leads up to the site of the engine house. This is the property most developed upon this mountain, and its success will mean the development of other and contiguous claims. Men employed (July 16), 15, preparing site for plant.

South Belt.

On Lake Mountain, south of Rosland, and in the intervening valley, also on the east and south slopes of Deer Park Mountain, all of which, with Look-Out Mountain further east, may be known as the South Belt, the same system of east and west fissures obtain, and with the comparatively little work done, the results are such as to encourage the much more extensive investigation of many of the claims. With the exception of the Crown Point and Deer Park, the ore bodies have not yet been found of large size, but the fissures are very persistent, and the average ore is of, so far, fair value, the ore on most of these properties being different from the rest of the camp in that there is very little pyrrhotite, but much iron and arsenopyrites, with some zinc blende and galena, while the silver value is higher than the gold. But pyrrhotite ore is also found, as will be detailed below. The construction of the tramway through the centre of this belt has rendered easy the shipment of ore, and already the Crown Point and Mayflower are shipping.

G. R. Sovereign.

Area, 52 acres. Title, Crown grant applied for. Location, about 1 mile south of Trail, on Look-Out Mountain, and about 1400 feet above that town. Bonded to Gen. J. Warren, Butte, D. R. Harris, Victoria, et al. Much interest centres in the prospect work being done on this claim, that is 6 miles east of Rosland, and in a shaft, now over 30 feet deep, ore has been followed all the way down, consisting of low grade pyrrhotite in the diorite, until now, when more copper pyrites, quartz, and calcite are coming in with a rise in the gold assay value, an assay for Gen. Warren on all the ore coming out recently giving \$16.40. On the surface the rock is much iron stained by the decomposed sulphides present, and work is to be pushed much faster to prove up the claim before the expiration of the working bond, May 1, 1897. This very favourable showing on this mountain is promoting other work, and some claims will be prosecuted with the diamond drill by Mr. Hector McBae.

Crown Point.

Location on the south belt, south of Trail Creek, on the north slope of Lake Mountain, 2½ miles south-east of Rosland. Title, the Crown Point Crown grant, No. 981, White Swan and Hidden Treasure locations. This group of three adjoining claims is the property of the Crown Point Gold Mining Company, Spokane, Washington. President, John B. Finch; secretary, H. K. Galusha, Spokane; superintendent, V. D. Williamson, Rosland. Until last April the Crown Point was under different management, under whose direction a shaft or incline, dip about 50°, was sunk 130 feet, encountering at 60 feet a dyke, which is now clearly shown upon the surface as 30 to 40 feet wide, strike north and south, dipping to the east 60°. Owing to bad air and water it was impossible to inspect the lower workings, but they were described as consisting of a drift at the depth of 70 feet, for 90 feet along the dyke, having for 60 feet ore, while at 50 feet a wing was sunk 20 feet, again along the wall of the dyke, at the bottom of which it is claimed there were 4 feet of solid sulphides. At the bottom a drift was run west 100 feet with a crosscut 50 feet, and an east drift of 75 feet, with a 50 feet crosscut, all in barren diorite, the workings having probably been deflected from the ore zone by following along the dyke. On the surface on either side of the dyke, apparently with little or no displacement, is exposed, when the iron capping is removed, a body of sulphide ore, or massive pyrrhotite with some copper pyrites, from 3 to 8 feet wide, strike a little north of west, dip south into the mountain 45° to 60°, the enclosing country rock being a fine-grained diorite, so common in the claims along this slope. At the top of the shaft the ore is about 7 feet wide, and down it for 35 feet it is 3 to 5 feet wide, while it is fully 7 feet wide where it is being stopped out.

A wagon road has been built for about ¼ mile down to the C. and W. R. R. tracks, from which a spur can easily be brought to a point below the main tunnel that is now being driven 350 feet to tap the ore shaft 150 feet west of the dyke, 170 feet below the surface. On the dump were piled several hundred tons of ore, of which regular shipments to the Trail smelter have begun, the first returns for which are reported as being very satisfactory. Number of men, 14.

West of this property are three claims, all held under Crown grants, the Tiger, Uncle Sam, and Gem, through which runs what is believed to be the continuation of the Crown Point lead, the country rock being a fine-grained greenish diorite. On the Gem and Uncle Sam two shafts were sunk near the dividing end line, and some low grade ore taken out, consisting of mispickel with some copper pyrites and zinc blende, and some quartz and calcite, but no work was being done at time of visit. On the Tiger a cross-

cut tunnel was in 160 feet east to explore the ground under a heavy iron capping on the surface. To the south of this an open cut into the iron capping uncovered 3 to 4 feet of very good looking ore, which a tunnel and crosscut below failed to strike. Work has been retarded by bush fires that lately destroyed all the buildings. Agent, Mr. N. Campbell, Rosland.

South of the Crown grant are three claims, the Southern Cross, Wolverine No. 2, and Iron Hill, on the first of which is a Crown grant, owned by the Southern Cross and Wolverine Consolidated Gold Mining Company. President, Thomas Smirli; secretary and treasurer, D. B. Bogle, Rosland. Capital stock, 500,000 \$1 shares. On the Southern Cross two open cuts and two tunnels, one 75 feet, the other 90 feet long, are made in the very iron-stained diorite to develop a well-defined fissure, in which the ore in places widens out from nothing to 2 or 3 feet of solid sulphides. In the 90 feet, or working tunnel, at 10 feet, is encountered what is probably the Crown Point dyke, down along which a wing was sunk 25 feet with 2 or 3 feet of low grade pyrrhotite, copper pyrites, and blende, when water caused work to be stopped. On the Wolverine there is a large exposure of iron-stained rock with stringers of sulphides, but no work has been done yet to develop the conditions that may prevail.

Further west are the Trilby, Last Chance, and Celtic Queen, on the last of which 2 to 4 feet of mixed sulphides have been found along an east and west fissure that is crossed by a large north and south dyke without any observable displacement. Development work is now proceeding under Mr. Dennis Clark, Rosland.

R. E. Lee and Maid of Erin.

Area about 100 acres. Title, locations. Located 1 mile south of Rosland. Owned by W. Norris Dunn and M. Sullivan, Rosland, but bonded to the R. E. Lee Gold Mining Company. President, Charles S. Vorhees; secretary, H. L. Wilson, Spokane. These claims were bonded by Mr. John M. Burke, but no work is being done at the present time. The principal work has been done near the centre of the dividing end line of the two claims; as on the R. E. Lee there is a 30 feet tunnel with a 20 feet drift, in the floor of which can be seen 2 to 3 feet of mixed ore in a lead running east and west and dipping north 60°. About 50 feet west, but on the Maid of Erin, is the main shaft, 74 feet deep, with a level at 50 feet, running 47 east, and a crosscut 24 feet north. As water filled these workings they could not be seen, but on the surface they were piled several tons of ore, consisting mostly of fine-grained mispickel or arsenopyrite, the value of which was not ascertained; but Mr. Dunn reports that from 12 tons taken from the tunnel the net smelter return was \$453 for the lot in gold. About 500 feet south of this lead a 30 feet shaft is sunk in a second vein of mispickel, 2 to 14 inches thick, said to assay well in gold, dip and strike the same.

Immediately west of this property is the Gopher, not working from a 60 feet shaft in which has been taken considerable ore, similar to that of the R. E. Lee, and which is thought to be on the same vein that runs into the next claim to the west, the Homestake. To the south is the Mayflower, already described.

Homestake.

Area, 21.3 acres. Title, Crown grant. Location, ½ mile south of Rosland. Under bond to the Homestake Gold Mining Company. President, S. J. Johnson, Rosland. At the time of visit (July 9) no work was being done, and the workings were full of water; but, however, at all of them there was piled up considerable ore, not high grade, or iron pyrites, and marcasite, or "white iron," with some copper pyrites and zinc blende, with calcite and quartz in the diorite. This vein can be traced for nearly 700 feet through the claim by cuts, strike east and west, dip 70° north. A tunnel runs in a considerable distance, but not on the lead, while at the mouth is a small shaft said to be all in ore, in some of which, piled on top, is galena. A short distance east are two shafts, 75 feet apart and connected by a drift, one being 90 feet deep, in which workings was ore, of which about 100 tons were on the dump, 50 or 60 feet from the tramway. The proper and thorough opening up of this promising property only awaits the settlement of the bond and sufficient capital for adequate work.

North of this claim is the Freeburn claim, Crown grant applied for, on which a 25 feet shaft near the tramway starts down on a narrow crevice, strike nearly east and west, which near the bottom widens to a few inches of ore, similar to that found in the Homestake.

West of this claim, and south of Rosland townsite, is the Nest Egg mining claim. Title, Crown grant; owned by the Nest Egg Gold Mining Company, of Victoria. On this property there appear to be two leads in which the ore is now pyrrhotite and copper pyrites, similar to most of the ore now shipped. Near the discovery post is a shaft now filled with water, but showing at the top more or less sulphides scattered through the diorite, of which 2 or 3 tons were piled on the dump. About 400 feet south is the second lead, strike about south-west and north-east, dip northerly, on which is an open cut for 20 feet, and then a shaft filled with water, with mixed ore near the top, and several tons on the dump. West of this opening is a second, a shaft 30 feet deep now being sunk, at the top of which is 1½ to 2 feet of ore, which improves in depth, several tons of good looking ore being piled up, or pyrrhotite and copper pyrites, fine grained, and impregnated with quartz.

The Phoenix—title, Crown grant, owned by the Phoenix Gold Mining Company, general manager, Mr. J. K. Clark—has a 30 feet shaft now being sunk 50 feet more, in which is ore similar to that found on the Nest Egg, or mixed sulphides and diorite.

North of the Homestake, and west of the Mayflower, are the Blue Bird and Carlew. The Blue Bird, agent, E. L. Bosquet, Rosland, is believed to be the extension of the Mayflower vein, and in a shaft 22 feet deep, on 2 to 3 feet of mixed ore, of which about 10 tons are on the dump, a fine-grained iron pyrites and mispickel, blende, and galena. Further surface prospecting is now being done. On the Carlew, owned by John Earle and Jox Vogel, is a 43 feet shaft in which is a vein of 6 to 10 inches of ore similar to that of the Blue Bird, which has given assays of \$5 to \$10 in gold and 70 to 80 ounces silver. When water leaves the shaft, or soon, work in the shaft will be continued.

One ½ mile west of these claims, along the Dawdney trail, considerable work is now in progress, and that on the Zilor, Lily May, and Deer Park may be mentioned. The Zilor, owned by W. Perdue and W. J. McKay, but bonded by E. Morrison, of Victoria, has three shafts full of water, the one at the east end being in barren diorite, while on a 30 feet shaft is considerable ore on the dump, similar to the Lily May ore. Further west is a 60 feet shaft that started down in a good body of ore, but passed into barren rock, although ore is reported to be in the bottom.

Lily May.

Area, 13.87 acres. Title, Crown grant. Location, 1½ mile south of Rosland on the Dawdney trail. Owners, Lily May Gold Mining Company, of Spokane, Wash. President, George Turner; secretary-treasurer, Frank Kiser, Spokane; superintendent, Frank Watson, Rosland. Capital stock, \$1,000,000 in \$1 shares. This is the oldest claim in this camp, having been located in 1889 by Jos. Bougoula, but recorded in 1890 by Oliver Borden. In a very fine-grained rock, probably a diorite, the iron-capped outcrop was traced for some distance and a tunnel started on a vein running north-west by south-east, dip north east 50° to 60°, following ore that assayed in silver, gold, and lead, silver being predominant for nearly 40 feet. Since this the tunnel has been advanced to 85 feet, with some mineral all the way, when it connects with an incline from the surface, 37 feet above, in which the ore petered out, but in a foot widened out again to 3 or 4 feet of solid sulphides, consisting of white iron or marcasite and iron pyrites with zinc blende. A wing is being sunk now at this point that at 12 feet passed into barren rock to again expose at 52 feet ore 3 to 18 inches wide (July 10), consisting of quartz gangue and pyrites that yield on assay a good value in gold and silver, although it may yet be rated as low grade ore. To the south two small shafts point to the existence of a second lead on this property, which is carefully prospected, while ore encountered in development work is being sorted and stacked. A road ¼ mile long, and of an easy grade, can be made to the tramway when enough ore of good grade can be mined. Mr. Watson, while actively pushing the

working of this property, has begun the prospecting of the Black Horse claim to the west. Number of men employed, 12.

Deer Park.

Area, 52 acres. Title, Crown grant. Location, on east side of the Deer Park Mountain, 1½ mile south-west of Rosland. Owned by the Deer Park Gold Mining Company. President, L. W. Matholland; secretary, R. L. Rutter, Spokane. Capital stock, 1,000,000 shares of \$1 each. General manager, E. J. Kitley, Rosland. On this property is one of the largest bodies of sulphides in this district, in this very low grade massive pyrrhotite. In the bottom of the shaft the ore was showing some change in that some chalcocypite and quartz were coming in, which may lead to improvement in the grade of the ore, and to a chute of pay ore.

In the valley south-west of the town work is being done on several claims, such as the Commander, Palo Alto, and San Joaquin, Butte, Florence, Alameda, and Tramway.

Commander.

Area, 52 acres. Title, Crown grant applied for. Location, 1½ mile south-east of Rosland on the road to Trail. Owners, the Commander Mining and Smelting Company, Spokane. General manager, W. J. Harris; secretary and treasurer, Frank Watson, Rosland. Capital stock, \$1,000,000 at \$1 each. After considerable work had been done on the surface by trenching, a shaft 5 by 9 feet was begun on an outcrop of mineralised rock east of a porphyry dyke that runs nearly north and south. It follows down on a smooth wall for some distance, several tons of ore being taken out in sinking. At the bottom (73 feet, July 10) the diorite carries more or less copper pyrites, and assays in gold from \$1 to \$13 per ton. There is a 20 horse-power boiler, a good gallows frame, and a small sinking pump that was not working very well, thus retarding more rapid sinking, although not much water was coming in. On reaching a depth of 100 feet drifts will be run east and west to explore the ground, and ore can be shipped by wagon to Trail, or to the tramway, about ½ of a mile distant. Foreman, J. Houghton. Number of men, 12.

Palo Alto and San Joaquin.

Area, each claim is of full size. Title, Crown grant. The Palo Alto is owned by the Palo Alto Gold Mining Company, Spokane, P. A. O'Farrell, President, and the San Joaquin by the San Joaquin Gold Mining Company (Limited) of Victoria. Trustees, E. D. W. Higgins. Through these properties, all east and west, a vein has been traced for some distance; that near the separating end line is crossed by the porphyry dyke, to the west of which, on the Palo Alto, is a 31 feet shaft, down which for 17 feet was oxidised matter, and after that to the bottom up to a width of 3 feet of ore, or fine-grained arseno pyrite. 100 feet west of this is an open cut, on 6 feet of ledge matter, in which not enough depth has been attained to reach unaltered ore. East of the dyke on the San Joaquin a shaft is being sunk on a narrow crevice, and at a depth of 18 feet the diorite has become much more mineralised with pyrrhotite and copper pyrites. The Palo Alto is not being worked, but the San Joaquin shaft will be continued.

Cost of Mining.

The cost of labour and mine supplies is now about the same as found in other mining centres of the west. The following is the cost of labour—Miners, \$3 to \$3.50 per eight and ten hour shifts; trammers and top-men, \$2.50 per ten hours; engineers, \$3.50 to \$4 per ten hours; timbermen and blacksmiths, \$3.50 to \$4 per ten hours; foremen, \$4 to \$5 per day. The cost of driving tunnels or drifts depends much upon the nature of the rock; in exceptional places, where the ground is much broken, the cost is from \$7 to \$10 per foot, but in the solid, tough diorite, from \$10.50 to \$15.50 per foot. Shaft-sinking depends upon the size to some extent, but costs from \$18 to \$30 a foot. The price for timber, lumber, wood and other supplies is now very reasonable.

TIN TICKETING.

THE fortnightly ticketing for tin ores was held at Tabb's Hotel, Redruth, on Tuesday. Results:—

Mines	VALUES OF ORES SOLD BY EACH MINE.			
	Tons	Per ton.	\$	£ s. d.
Dolcoath No. 1	14 0	36 5 0	510 0 0	£ 510 0 0
do No. 1a	14 0	36 5 0	510 0 0	£ 510 0 0
do No. 1b	12 0	36 10 6	435 0 0	£ 435 0 0
Wheal Grenville a	18 0	37 17 6	671 15 0	£ 671 15 0
do b	10 0	37 17 6	371 15 0	£ 371 15 0
Basset Mines (Ld.) No. 1	11 0	38 12 6	421 17 6	£ 421 17 6
do No. 1a	11 0	38 12 6	421 17 6	£ 421 17 6
do No. 2	4 0	27 12 6	110 10 0	£ 110 10 0
Carn Brea and Tincroft 1	9 0	34 12 6	311 12 6	£ 311 12 6
Mines (Limited) 1a	9 0	35 2 6	316 2 6	£ 316 2 6
do No. 2	1 0	29 0 0	29 0 0	£ 29 0 0
do No. 3	1 10	11 5 0	16 17 6	£ 16 17 6
Levant	16 0	39 17 6	633 0 0	£ 633 0 0
West Kitty	14 0	38 15 0	534 10 0	£ 534 10 0
East Pool a	6 0	24 17 6	145 0 0	£ 145 0 0
do b	6 0	25 2 6	150 15 0	£ 150 15 0
do No. 2	1 0	10 2 6	10 2 6	£ 10 2 6
Phoenix United No. 1	9 0	36 17 6	331 17 6	£ 331 17 6
	166 10		£ 5972 12 6	

AVERAGE PRICE PER TON, £35 17s. 6d.

AVERAGE PRICES PER TON.

September 8	£36 1 6	October 6	£34 9 7
September 22	£35 11 6	October 20	£35 17 6

VALUES OF ORES PURCHASED BY EACH FIRM.

Firms	Tons.			
	Tons	Per ton.	\$	£ s. d.
Carvedras	31	1391 0 0	43512 0 0	£ 43512 0 0
Chyndour	37	1324 0 0	49088 0 0	£ 49088 0 0
Williams	25	810 15 0	20262 15 0	£ 20262 15 0
Redruth	11	346 12 6	3809 10 0	£ 3809 10 0
Cornish	62½	2361 5 0	14743 12 6	£ 14743 12 6
	166½		£ 5972 12 6	

COAL IN NORWAY.—It has long been known that bituminous coal occurs in Ando, the most northerly of the Luffenden Islands; but it is only recently that trial borings have shown that the deposits are workable. The seams are met with in the eastern portion of the island, and extend for a length of 5½ miles and for a width of 2 miles. They rest upon granite, which has been struck at a depth of 140 yards. At the surface there is a post bog 3 to 4 yards in depth, overlying the coal seams which alternate with layers of fine hard sandstone. In addition to coal, combustible peat, bituminous shale, bog iron ore, and fire clay have been found for the first time in Norway in this island. The island is provided with an excellent harbour for shipping the coal. — *Colony Guardian.*

THE sixth annual general meeting of the New Queen Gold Mining Company (Limited) will be held at Winchester House on November 5, at three o'clock in the afternoon.

DEATH OF OUR SOUTH AUSTRALIAN CORRESPONDENT.—It is with exceeding regret that we have to record the death of Mr. J. B. Austin, our late Correspondent in South Australia. Mr. Austin was an able and eminent expert, and the work that he has performed for the colony throughout his long career of usefulness is not likely to be readily forgotten. For 30 years he has advanced the interests of South Australia in the columns of *The Mining Journal*, and his literary efforts have brought its merits to the front. Not only will his loss be greatly felt by ourselves and our readers, but his death will be severely felt by the colony, on whose behalf he has laboured so zealously and patriotically.

PHOENIX UNITED MINES.

A vote of thanks to the liquidators terminated the proceedings.

LINDSAY'S CONSOLIDATED MINES, LIMITED.

...ing continuously when once started. Water
... a tolerable amount of anxiety. The flow is very good

HANNAN'S "GOLDEN PIKE" GOLD MINE, LIMITED.

HANNAN'S "GOLDEN PIKE" GOLD MINE, LIMITED.

part payment of purchase price, and the remaining 5000 shares were reserved for future issue. The working capital of the company

JOKER PROPRIETARY GOLD MINES (LIMITED);

**KRUGERSDORP PROPRIETARY AND GOLD MINING
COMPANY (LIMITED).**

The statutory general meeting of the Krugersdorp Proprietary and Gold Mining Company (Limited) was held on Wed-

day and Gold Mining Company (Limited) was held on Wednesday, at Winchester House, Old Broad-street, E.C.—Sir John Lister Kaye presided, and stated that it was unnecessary to recapitulate the circumstances attending the taking over the property from the syndicate. The property of the company consisted of 220 claims on the Kosterfontein estate, with an option of acquiring the remainder, amounting to 140 claims. It was the intention of the directors to prospect and thoroughly investigate the property before advising the shareholders to accept the option. Their other property was in the Steemkoppjes district, where they had 1000 acres of land which was supposed to be auriferous, and they had also the option of taking up other claims if they found them to be auriferous. Besides the properties he had mentioned, they had a half of a magnificent water right at Steemkoppjes, which they shared with the Johannesburg Water Company. Johannesburg had grown so enormously of late years that the Johannesburg Water Company had been compelled to seek for a supply of water some miles from the town. The company had already got to Weltevreden, and he understood that the supply of water they received from that place was insufficient for their purpose. It was, therefore, possible that they would be compelled to obtain a supply of water from Steemkoppjes, and then they would be able to make a good sale to the Johannesburg Waterworks Company.—A vote of thanks to the Chairman terminated the proceedings.

SHAFT SINKING IN CORNISH MINES

A resolution was then carried, endorsing the action of the committee.

The statutory meeting of the shareholders in the Hex River Syndicate (Limited) was held on Thursday, at the offices, 15 and 16, George-street, E.C., when Mr. W. H. Roberts, who presided, said, judging from the reports the directors had received, the property was a very valuable one. All the capital of the syndicate—£10,000—was subscribed for, leaving in hand, after paying for the property a reserve cash (capital) of £1500. There were about 190 mining claims acquired by the syndicate, and the excellent reports made by Messrs. Blane and James on the prospects had been fully confirmed by the manager of the Spes Bona Mine, Mr. D. S. Johnston. He added that in his opinion the mine would be productive for 60 years, and that the net annual income that would be derived from the working of it might be £62,500. Further than this Mr. Johnston asserted that under conditions, which he believed were likely to occur, there was a possibility of the mine producing as much as £150,000 per annum. All three gentlemen were convinced that the reefs running through the property were identical with those which entered throughout the claims of the Heidelberg-Roodepoort Gold Mining Company and the Hex River Exploitation Company, both of which were being worked with great success.—A vote of thanks to the Chairman concluded the meeting.

At a meeting of the directors held yesterday, it was resolved—“That an interim dividend, free of income-tax, of 2s. per share be and is hereby declared, payable on November 21 to the shareholders on the books of the company on the 31st inst., and that the transfer books be closed during the said 31st inst.”

COMPANIES BY WHOM THE ORES WERE PURCHASED.		
Names.	Tons.	Amount.
Vivian and Sons.....	145	£245 8 0
P. Grenfell and Sons.....	135	451 13 0
Nevill, Druce, and Co.....	139	431 0 0
Williams, Foster, and Co.....	127	494 7 0
Elliott's Metal Co.....	85	230 18 0
Charles Lambert and Co.....	184	372 4 0
Liverpool Silver and Copper Co.	113	178 18 6
Burnard, Alger, & Co. (Limited)	62	3 2 0
Total	991	£2651 12 6

Friday, October 30.
Johannesburg.

have been reached. If they went to the coal mines they
couple of buckets going down without anything to protect the
iron.

MINING IN THE UNITED STATES.

Deep mining in California.—A new mining district in Washington State.—The revival of a Utah boom.—The wondrous tale of a fisher of gold.

(FROM OUR OWN CORRESPONDENT.)

NEW YORK CITY, OCTOBER 6.

THE Mother lode of California seems likely to maintain its supremacy as the most notable gold belt of the world. At the famous Kennedy Mine, near Jackson, in Amador County, the new level opened up at 2150 feet from surface has just reached the continuation of the large and rich ore body encountered in the 1950 level. This affords another proof of the fact that the ore chutes extend below the 2000 feet zone, which at one time was arbitrarily declared to be the limit of pay mineral in the Mother lode. There was never any good reason in existence for such a limitation, but prejudices in mining are easy to create and hard to kill. Additional deep level explorations in the same huge tract of graphitic slates between greenstone dykes are now in active progress at many points, and all are showing most favourable indications. Capital from San Francisco, Chicago, Boston, Paris, and, to some extent, London, is being expended in these operations, and brilliant results are being achieved. California is once more coming to the front as our Golden State *par excellence*, and deserves the earnest attention of all who are interested in gold production as a legitimate and profitable industry.

Another district that will repay careful observation has up to the present moment remained unknown, or, at least, unappreciated, except in its own immediate neighbourhood. I allude to the Metalline mining district on the Pend d'Oreille River, just south of the boundary line between British Columbia and Washington. I know something of the general territory in question, and I have discussed the matter with miners who have for the last few years been engaged in its actual exploration and development. What has hitherto hindered a more general recognition of its riches has been its distance from railroad transportation, added to the fact of the river navigation being impeded by some ½ mile or so of rocks in a gorge known as the Box Canon. Arrangements are now in progress with the gold syndicate of this city to undertake the removal of the impediments, and it is estimated that next summer will see the beginning of regular steamer traffic between the Metalline district and the railroad system that intersects the country where the Pend d'Oreille River falls into the lake of the same name. The Metalline ores run high in lead, gold, and silver, while to the east and west are large deposits of copper. Some of the gold-bearing ledges already located and developed show immense bodies of high-grade mineral, and I have heard competent experts say that, in their judgment, the district is decidedly superior to the now celebrated Trail Creek, Slocan, and Kootenay regions, which at no great distance form part of the same general metalliferous range. It is thought that many fresh discoveries will soon be announced in the western or Columbia River part of the country, seeing that very extensive placer enterprises are now in progress, with highly satisfactory results. In the early sixties the frontiersmen did much gold washing in a crude and primitive way, but yet they secured large quantities of nuggets and dust; and now that improved appliances are being brought to bear the returns seem likely to reach high figures. Coal, too, has been recently found of good quality and in immense quantity, and last month a ledge of nickel ore was discovered on the Columbia River in Stevens' County, about four miles from Colville.

Silver City, in Utah, is once more booming. It was famous enough in old days; but when the ores had been extracted from the upper levels of the various mines, and sulphides of comparatively low value made their appearance, the cry was raised that "the bottom had dropped out of the camp," and abandonment became the order of the day. Then, after many years, came the dawn of a new era. There were those who were unwilling to accept the prevailing theory that the sulphide zone marked the end of the precious metals. The first to prove its fallaciousness were the owners of the Swansea, a location right on the margin of the camp. Under the direction of Superintendent William Hatfield, the shaft of the mine was continued down into the sulphides, which had frightened away the former proprietors after they had taken hundreds of thousands of dollars from the claim. Success followed. The pyrite proved to be but, as it were, the wall of an inner treasure house. In the upper workings the pay streak varied from 12 to 18 inches in width, whereas, in the region below the sulphides, it has increased to 5 feet. The output already averages about seven cars a week, while the orebody continues to increase with the progress of development. The neighbouring mines are being reopened, and are meeting with a similar reward. Already eight hoisting plants have been set up, and as many more are promised within the next 60 days. Old mines are in demand; those with the sulphide exposed being preferred.

Those of us who are old enough to remember your columns of from 20 to 30 years ago must often recall the interest and wonder with which they used to peruse the statements of the late T. A. Readwin respecting the growth of gold. These memories are revived when one enters into conversation with our Western miners, among whom the conviction is deeply rooted that gold is perpetually growing. Nor can it be gainsaid by the most sober-minded of modern chemists that there is a foundation of fact for the belief. In the Mother Lode Mines of California, for example, old timers are frequently found to show gold in their ashes when burnt. The metal was not present in the wood when the timbers were first put in place; and, therefore, the conclusion is irresistible that it has subsequently made its appearance. The true explanation, of course, is that gold is present in the water coming from the workings of the mine, and is deposited when coming into contact with the organic matter of the woods, but then this simply brings us face to face with another difficulty—viz., that of understanding in what form the water carries the gold, and from whence is the metal derived. In some of the mountain streams of Colorado similar observations were made many years ago.

I mention this matter because of a singular story which has just reached me. Private letters received here from Arizona show us that Dame Nature is not to be outdone, even by Jules Verne. It seems that for some years past an old prospector, known only by the sobriquet of "Scout," has been appearing from time to time at the various ranches along the upper portion of the Gila River, and has been exchanging lumps of gold for provisions, clothing, ammunition, and the like. He would never say where the gold had been found, and a very singular feature of the case consisted in the fact of the gold being alloyed with copper and zinc, and showing evident signs of fusion. "Scout" was often followed, and it was ascertained that he made his way into the White Mountain Indian Reservation assigned to the fierce Apaches. When I myself was in Arizona I often heard wonderful stories as to the vast riches of the Apache territory, and it is undoubtedly true that many prospectors have been thus tempted to their death,

and that those who have occasionally escaped have returned with exceedingly valuable specimens. If, therefore, "Scout" had smuggled out (for no one can legally do any prospecting or gold digging in an Indian Reservation) some rich nuggets or pieces of ore, his proceeding would have been regarded as normal and canny. But the appearance of the gold he offered for sale seemed to indicate that he was actually running an assay furnace or miniature smelter on his own account somewhere in the mountains, and yet was unmolested by the Apache, which was a condition of affairs beyond all understanding. So, as I have said, his trail was followed and his movements were watched time and again. But he always managed to disappear soon after gaining the outlying spurs of the Gila range, and as more than one of his trackers disappeared completely, while the scalpless bodies of two were found by other adventurers, the "shadowing" of old "Scout" was eventually relinquished as a too hazardous and unprofitable undertaking. Matters remained thus until the early part of last month, when old "Scout" was one morning found lying at the door of a ranch occupied by a family with whom the old prospector had always been on very friendly terms. On this occasion he had come to see them for the last time. He was mortally wounded, having been shot through the breast by a man who had followed him to his secret resort in the Gila range, and whom he had silenced for ever. Before dying, "Scout" was able to give his friends the following explanation of how and where he had found his treasure.

Many years ago he heard from an Apache, with whom he had struck up a hunting friendship, that somewhere in the Gila range was a mountain upon which no Indian would ever tread, owing to a superstition that the mouth of the earth was there located, and would inevitably swallow up an intruder. His tale did not terrify old Scout, and he thought it probable that the wondrous mouth would turn out to be some cave or pit in which treasure had been deposited. Accordingly, after having had the mountain pointed out to him in the distance, he took the first practicable opportunity of secretly making his way thither. For many a day he wandered up and down through the woods and over the rocks. Finally in an almost inaccessible glen he suddenly found a roughly-built wall of stone, encircling a pit, that seemed to have been an old shaft excavated in pre-historic days. No bottom could be seen, and there was no means whatever of access to the interior. "Scout" dropped a stone into the pit, and a dull splash was soon heard. He then unravelled some yarn from his blanket and tied a cartridge to the end, thereby making a plummet or sounder for ascertaining the depth of the water. He paid out the whole of the line without touching bottom, but when he hauled up the cartridge he noticed a change in the appearance of the brass shell. It had become coated with metal of a different shade of yellow. The experiment was repeated, and the immersion prolonged; and "Scout," who was familiar enough with the deposition of metallic copper on iron when plunged in water issuing from certain mines, began to wonder whether he had found a kind of water that would deposit gold. He built a fire among some stones in such a way as to ensure a high degree of heat, and, after removing the powder and bullet from his sounder, he placed the cartridge shell in the fire. Very soon he had the satisfaction of recovering from the embers a lump of metal, which looked to him as though it might be mainly gold. He at once made tracks for the south, and went straight to Tucson, where, on the metal being assayed, it was pronounced to contain 32 per cent. of gold. Old "Scout" was delighted, but had sense enough to "lie low." He was provided for. He could lead the solitary, heaven-canopied life he loved best, and could always have the wherewithal for obtaining all needed supplies. All he had to do was to fish for gold, with cartridge shells as his bait. He was not disturbed by any geological wondering. He had no mineralogical conscience, and cared not whence the gold came, or how it was held in solution. It would appear that he never even attempted to prospect for any ledge or other gold-bearing formation near the old shaft; nor did he ever trouble himself to contrive any way of descending to the golden pool. He probably had no great faith in the superstition of the Indians proving binding enough to keep them away from the mountain if ever they should discover his work thereon; and as he was also in contempt of the Federal law he could not appeal to the United States authorities for protection. This latter point still proves an obstacle. Even if "Scout" did really give his friends clear and sufficient instructions as to the precise locality of the old shaft (respecting which conflicting versions are said to be now current), the information cannot be openly availed of. Probably, therefore, secret efforts will continue to be made to fish for gold as before, and all regular prospecting and claim locating will be deferred until the White Mountain reservation shall be thrown open to the public. In the meantime, "Scout" has left behind him a legacy of amazement for the benefit, and perhaps the instruction, of the scientific world.

Colorado marble.—Ore reducing works.—The great Austin tunnel.—The Alaska survey.—Trouble at the Peck mill.—Wyoming placers.—A new survey of Mercur.—Asphalt in Utah.—A Niagara in West Virginia.

NEW YORK CITY, OCTOBER 13.

The floors of the State capital in Denver are to be made of marble from Gunnison County. The Kelly Marble Works of that district have the contract, and are turning out stone of almost chemical purity and absolute whiteness. It is said that even Carrara marble does not excel the Gunnison product. Few people, indeed, are aware of the resources of the United States in this direction. From Maine to Georgia and California there is not a State which cannot produce marble of first-class quality.

Why is it that English investors do not form a few companies for erecting and operating ore reducing and smelting works in the various mining districts of the United States? Metallurgy surely is an industry, even if mining be looked upon as a speculation. The profits are large and business certain. This is becoming obvious to our eastern capitalists, and I hear of many new custom mills and reduction works being installed in the interests of New Yorkers and Down-Easters generally. A prominent instance is that of the Boulder Ore Reduction Company, which has just been organised for erecting works at Boulder, Colorado, where ore can be treated and the precious metals extracted without transport to Denver. Chlorination will be the principal method relied upon, and the works will be in touch with the main line of the Union Pacific, Denver, and Gulf Railroad, so that an abundant supply of coal can be obtained from the Marshall Mines and shipped to the establishment at trifling expense. The ore-producing territory subservient to the works includes several counties, and there can be no question as to the permanent success of the company.

Nevada is again coming into prominence. In many parts of the State there is a revival of mining activity. A notable step forward has just been taken at Austin, where the great tunnel has at length cut the main vein of the famous Austin group of mines. This is the boldest piece of work that has been performed in Nevada for many a long year. The tunnel is 1½ mile in length, and intersects the ore bodies at a great depth from surface. The fissures have always been very wet, and, therefore, great precautions had to

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THE MINING JOURNAL, RAILWAY AND COMMERCIAL GAZETTE.

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Captain R. A. THOMAS (Dolcoath) objected to the suggested pent houses, especially in round shafts. He agreed with Mr. James that any timber put in the shaft in the way of a division, &c., would in a very short time be blown away when they were sinking in hard granite. The advantage of a round shaft over a rectangular shaft was purely on the ground of the adoption of wire rope guides. The advantages of a round shaft, if wood runners and dividers were used, he failed to see. In most of the deep mines in this country wire ropes as guides were used, largely and successfully, accidents being very few.

Mr. N. THRESTALL thought that no two people seemed to agree in regard to shaft sinking. In De Beers they had discarded the wire guide ropes and put down wood runners, and more was drawn out of that shaft, he believed, than in any other shaft in the world.

Mr. W. THOMAS stated that there was considerable difference of opinion as to the relative cost of round and rectangular shafts. He believed that everyone would readily grant that if a round shaft could be put down for the same cost per fathom it would be preferable to a rectangular shaft. It had been stated that there were only three round shafts in South Africa, and that not one of them was 500 feet deep, whilst in Wales the circular shafts were in favour. In America they were nearly all rectangular shafts. He thought objection might be raised to the statement that wire rope guides would be destroyed by chemical action in three months. It was so, how was it the winding ropes lasted 12 or 15 months, and compressed air pipes two or three years? The whole future of shaft sinking might be summed up in one word—depth. In the past few years the depth of shafts had been doubled. Whereas 10 years ago 500 fathoms was considered deep, a depth of 800 fathoms had now been reached in one or two, and a scheme was now being prepared to sink one nearly two miles deep.

Captain TRAGUE having dealt with the points raised, a vote of thanks was proposed by Captain A. THOMAS.

Captain WHITE, in seconding, favoured rectangular shafts, and observed that while speed was all very well, permanency of working was the next thing. (Hear, hear.)

The vote was cordially passed, and a similar compliment to the Chairman concluded the meeting.

NEWS FROM WEST AUSTRALIA.

CUTTINGS FROM THE LOCAL PRESS.

(From the Mining Journal of Western Australia.)

THE Prince George, a 24-acre property, situate on the Yalgoo field, is opening up well. The claim is situate near the famous Joker Mine, and is owned by a Perth syndicate, who are placing it on the London market. There are four shafts on the property, the main one being 90 feet deep, and good indications show in all of them. A new line of reef has been discovered east of the other, and gold the size of peas is to be seen sticking out where it has been opened on the surface. Judging from prospects taken out it should go from 5 to 10 ounces to the ton. A reef is also being opened up on the main Prince George line, south of the main shaft, and has been cut into for a distance of 10 feet, without any sign of the wall. The stone is heavily charged with oxide of iron and green carbonate stains, and shows good gold. The manager has great faith in the property, and several old mining men who have seen the show and dolled out prospects, say that the property will prove one of the good things of the district.

The Welcome gives every promise of continuing to be the sensation of the Marchion for an unlimited length of time to come (see the Mount Magnet Miner). There is little fresh to report regarding the appearance of the rich lode, which has now been laid to a depth of 30 feet. The vein of gold is going down as strong as ever, and fresh dabs of gold are continually being met in different parts of the reef. The dolly pot is still doing good service, being kept in active work from morning till night instead of "waking off" in the usual way, they simply dry-blow the powdered ore, the gold being principally very coarse, remaining at the bottom of each dish in a thick glittering mass. One dish treated during the visit of our representative last Wednesday, yielded fully an ounce of the precious metal. The cross reef is also looking exceedingly well. The stone now being raised from a depth of rather more than 30 feet, is similar in appearance to that in the main lode, and shows both coarse and fine gold. The width of the lode is at present about 9 feet, but the full width has not yet been ascertained, only the footwall having been met with.

A mass meeting of citizens is being arranged for in Coolgardie to protest against the proposed Menzies railway starting from Southern Cross. A deputation has waited upon the Mayor of Coolgardie with a view of calling the meeting. Several speeches were made by influential gentlemen, and the question of separation was discussed at some length, and finally it was virtually decided to go for separation, railway or no railway. Delegates having been appointed to organise operations, the deputation dispersed.

Balley's Island, on the Marchion, once famed for its alluvial deposits, is now attracting a lot of attention on account of its numerous quartz reefs. An important find is recently reported from the Golden Island lease, at the southern end of the island. It consists of a reef about 3 feet 6 inches wide, which carries splendid gold, and prospects average 10 ounces to the ton. This reef is probably the source from which a lot of alluvial gold has been shed.

A new line of reef, the outcrop of which can be traced for a mile, has been pegged out about a mile east of the De Beers' line at Gibraltar. The outcrops show gold for over 30 chains.

The Royal Blue at Mount Magnet is developing well, and a drive is being put in at a depth of 51 feet to prove the eastern lode.

The hard nature of the ground is affecting development operations at Mount Magnet. The Jupiter lease has a shaft down 25 feet now, and is on a splendid body of stone, composed of ironstone and quartz. Both coarse and fine gold are to be seen right through the stone.

Several Bardoc leases have recently changed hands, and things are looking up in that district at present.

(From the Northern Mining Register.)

Although there has been no small amount of exemption from the labour conditions granted of late to leaseholders, it is satisfactory to note that the miners who have thus been relieved to a great extent are directing their energies to further prospecting these with a vivid eye, and the now far-famed Jones's Well is, as usual, much in evidence. The capitalist shows signs of nibbling, evincing, not the home of the Welcome. By all versed in mining, and in the opinion of those with an intimate knowledge of the various mining camps throughout the length and breadth of the Marchion principal centre. Although there may be pointed out instances where capital has been invested badly, and where it has been shockingly administered, the progress, which is being made with such syndicates as have capable managers, directing operations at their head, are displaying such results, that they counteract the evils complained by these mentioned, and act as a precursor to a new boom.

New business premises are springing up everywhere on the Magnet, and ground is becoming very valuable. The coming boom is drawing near, and a lively panorama is fully predicted. Experts are looking up like mushrooms everywhere, and the favourite remark for the expert now on this field is a discourse on ironstone, jasper, and quartzite lodes. As in Kalgoorlie the Great Boulder formation is made to perform some really strange contortions.

be taken to avoid a catastrophe. Flood gates were put in to protect the men in the event of a break, and they have now justified themselves. Last week a set of holes in the fore-drift were loaded as usual, and, after the men had retired, were fired by electricity. In another moment a volume of water that filled the tunnel came belching forth, and, sweeping everything before it, shot from the mouth of the great adit and ploughed up the earth for hundreds of yards. It took some considerable time for the accumulated water to be discharged, but work has now been resumed, and vast ore bodies are in sight, which show that the expenditure on the tunnel was wise, and bids fair to make the Austin take high rank among the producing mines of the country.

The experts sent last spring to Alaska by the United States Geological Survey to enquire into the prospects of quartz mining in that region have just returned. They spent the entire summer in their work. Crossing the Chilkat Pass, they reached the Upper Yukon about the middle of June. They then went down the Yukon to its mouth, stopping at the various mining camps on their way. They reached Fort St. George, near the mouth of the Yukon, three weeks ago, and sailed almost immediately for San Francisco. They satisfied themselves, they say, that the prospects of profitable quartz mining in Alaska are very good. There is a big ledge running north-west and south-east through the country similar to the Mother Lode of California, and they predict that this gold-bearing belt will, before many years, become the scene of great mining activity, and a source of a vast production of the yellow metal.

The Peck mill at the Independence Mine of Cripple Creek, respecting which I sent you an account a few weeks ago, is not yet a practical success. Several small lots have been run through, but no attempt has yet been made at regular operation. The main trouble experienced has been in the pulveriser, and in the caking of the ore as it issues from that part of the apparatus. A new pulveriser is now to be put in under the supervision of the three brothers Peck, who have all met at Victor for the purpose. It is a critical time for them, as if the process should fail at the Independence it will have received its death-blow. They speak very confidently, though, and seem absolutely sure of success.

From Laraine, Wyoming, comes the news of a big mining deal in Sweetwater country. The transaction is the sale of the Oregon Buttes placers, consisting of about 5000 acres of placer ground, by the owners, Tom Sun, Charles O'Connell, and J. C. McFarlane, of Rawlins, to a party of New York investors represented by E. A. Green, of New York City. The consideration is \$150,000. A hydraulic system costing over \$100,000 will have to be built to work the ground. The purchasers are said to have convinced themselves that they will net a clear profit of at least \$10,000,000.

There seems to be a great probability of the United States Geological Survey arranging for a re-examination of the Mercur district in Utah at an early date. When Mr. Spurr's investigation was made the zone in the Mercur had simply been scratched, and very little work had been done at the Golden Gate, where millcans are to-day blocked out for stoping. Also nothing was known of the Sacramento or the Sunshine, which have since demonstrated the continuity of the zone on a southern course. Hence the report that followed on his examination was mainly devoted to general considerations upon the geological history of the district, and said little as to the details of the occurrence of the ore bodies. These latter are what the practical miner must know, and the prospect of a re-survey under up-to-date conditions is hailed by Mercur men with great satisfaction.

The asphalt deposits in Utah have recently been carefully inspected by Mr. W. E. Youle, of the Pacific Asphalt Company, Los Angeles, California. He states that the mineral is of good quality, and if it has ever failed as a paving material the reason has been a want of proper mixing. The anticipation was expressed that Utah asphalt will take the paving trade of Chicago, Detroit, Cleveland, and other large cities of the middle States. In addition to asphalt, there are also large deposits of ozokerite and elaterite; and it would seem that capitalists have here yet another field for the safe and profitable employment of their money.

A Niagara in West Virginia.—This sounds novel, and even startling, but it has quite a respectable foundation of fact. Some of your wealthy people have taken part in utilising Niagara as a source of industrial energy. Why should not others put on their thinking-caps, and awake to the perception that not far from the City of Pittsburgh is the stupendous coal field of West Virginia, and that free carbon is just as ready and reliable a means of obtaining power as water at the top of a fall? It is surely a matter of surprise that some of your astute promoters should so long have failed to improve so facile and legitimate an opportunity of realising vast profits for themselves while providing the public in general with an absolutely safe investment capable of yielding very large dividends. It would be a simple matter to buy up some hundreds of thousands of acres of good coal in West Virginia, and then to put up an electricity-generating plant far exceeding that which has recently been installed at Niagara. The coal could be mined and fully utilised—slack and all—at a cost of about 50 cents per ton, or .025 cents per pound. The consumption of fuel can be brought down to 1 pound per horse-power per hour, and the loss of energy involved in conversion, transmission and distribution to individual consumers is extravagantly over-estimated if it be figured at 50 per cent. In other words, the coal Niagara of West Virginia could provide power in Pittsburgh at a cost of 0.50 centimetres per horse-power hour. If we assume that the average time for which power is employed is 4000 hours in the course of a year, we see that the yearly cost of a horse-power would be \$2, or less than one-tenth of the most economical rate hitherto attained. Consider also the cry that has long been raised by our philosophers and leading men of industry. They have pointed out that the best duty obtained from coal is only about one-tenth of its theoretical energy value, and they have indulged in many glowing predictions of the industrial millennium to come when human wisdom and ingenuity shall enable us to utilise such full value. Yet, as I have shown, this very state of things is now, and long has been, within our reach. I will go further. I will say that the much-disputed result has long been more than within reach. Some 10 years ago or so, Professor Henry Wurtz, of this city, elaborated a method of low distillation of coal whereby burning and lubricating oils and other products could be obtained of a commercial value more than sufficient to pay cost of mining and treatment. The residues, in the shape of coke and gas, were available as fuel for generating power. Thus, then, as was pointed out by Professor Wurtz and some other far-sighted men in 1887, it is perfectly practical to obtain energy for industrial purposes really and literally free of cost. Was there ever a better example of straining at a gnat and swallowing a camel than has been afforded by the great captains of industry in Europe and the United States since 1887? They have spent millions of hard cash, and have consumed an aggregate of untold years and centuries of mental labour in endeavour after endeavour to economise in this, that, and the other detail of steam and gas-producing and utilisation, and yet they have stubbornly refused to invest a few hundreds of thousands in fundamental improvement. And even now they are going into ecstasies over what they call the great feat

of harnessing for Niagara, and are all the while shutting their eyes to a much greater triumph that lies within their reach at the very doors of their factories. The spectacle is mirth-provoking, and shows us how true it is that men are but children of larger growth. Think of Mr. Carnegie and the rest of our Pittsburgh magnates deliberately arranging for coal to be laboriously carried from the mines to their works, when it can just as well be utilised in its native locality. Think of these keen men of business carefully studying their wage rolls, and cutting off every fraction of a cent that can possibly be managed, and yet shutting their eyes to the fact that their power is costing them ten times its fair price. They have not even the excuse of ignorance. Professor Wurtz, whose reputation as a chemist and as an authority on fuel is of the highest grade, long told the tale to their deaf ears. Mr. T. J. McTigue, whose reputation and success as an electrical engineer have been acknowledged throughout the country, and who himself a Pittsburgh man, made many an effort in the same direction and of an equally unavailing kind. Another authority addressed himself not only to the Pittsburgh manufacturers, but to some of your Liverpool men as well, and was met everywhere with deafness and indifference. I am, therefore, warranted in saying that the industrial progress of the world has been deliberately obstructed by the very people whose pockets suffered most; and this, too, in the land of the "almighty dollar." It would be poetical justice if your promoters were now to step forward and, by capturing the Niagara of West Virginia, compel our industrial oligarchy to pay them a heavy tribute.

THE SMUGGLER-UNION MINES, TELLURIDE, COLORADO.*

By J. A. PORTER, Denver, Colo.

IN offering some data relative to this property, and the treatment of its ores, it is proper to say that a purely scientific article has not been attempted. It is hoped, however, that the economic conditions presented may be of interest to the members of the institute, and that a discussion upon the concentration of the ore may throw some light upon a very unsatisfactory part of the work.

The Smuggler-Union Mines are located at the head of the San Miguel River, just south of the watershed between Ouray and Telluride. The latter town, reached by the Denver and Rio Grande Railway, is most picturesquely situated, at an altitude of 8500 feet, in a narrow valley, the lower portion of which exposes only the sedimentary rocks. Along the sides of the valley large masses of coarse alluvial deposits are left high above the present channel of the stream. Although much placer work has been done, and some very rich material has been found, the limited extent of the isolated tracts has made placer mining in this locality generally unprofitable. The valley terminates 2 miles above Telluride in an amphitheatre, around which walls rise abruptly several thousand feet. Here the company's mill is situated, being reached by a Bleichert tramway from the mines, and also by a spur of the Rio Grande Railway from Telluride. At this point, not only are the reddish sandstone and conglomerate beds exposed, but the contact between the conglomerate and the overlying gray volcanic breccia is plainly in view, even at a distance of many miles. A marked stratification is noticeable, indicating the successive layers of igneous breccia, locally termed trachyte. Throughout the entire region this is the favourite name among the miners for the rocks composing the igneous cap of the San Juan country. I may say, in passing, that the vague term San Juan, although originally more specific, now seems to comprise all that very high region which is situated on the head waters of the Rio Grande, Animas, Dolores, and San Miguel Rivers, and the Lake fork of the Gunnison. It covers some 50 miles square, mostly on the western slope of the continental divide, and includes the prosperous towns of Durango, Silverton, Rico, Telluride, Ouray, and Lake City. In this area many hundred peaks rise to an elevation of over 13,000 feet.

The geology of the district near Telluride, and as far south as Mount Wilson, is now receiving the attention of the United States Geological Survey, Mr. Whitman Cross and party having spent several months of the past summer in this field work. In advance of the Government report, Mr. Cross has kindly prepared a paper for the Colorado Scientific Society, which enables me to quote from the highest authority as to the local geology. I select from his very interesting and exhaustive paper only a single page, which briefly describes the formation in which the Smuggler vein occurs. The Sheridan Mine referred to by him adjoins the Smuggler, and is one of the properties worked by the Smuggler Company:—

"I have especially described the San Miguel conglomerate, a sedimentary deposit of much interest, lying immediately beneath the volcanic rocks of the region, and while containing little volcanic material among its pebbles, it is clear that the San Miguel formation belongs to the general period which witnessed the beginning of the volcanic outburst in south-western Colorado. The San Miguel conglomerate forms very conspicuous cliffs on both sides of the San Miguel River above Telluride. Upon it rests a stratified, and, as I now believe, water-laid series of volcanic tuffs and breccias, constituting the lower member of the volcanic complex. This bedded formation, consisting almost entirely of andesitic debris, has a thickness varying from little more than 1000 feet to somewhat more than 2000 feet. Its lower limit is seen on the trail leading up Marshall Creek, at an elevation of 9800 feet, and it extends to the level of the Sheridan Mine in Marshall basin at an elevation of nearly 12,000 feet. As the beds have a gentle dip, it appears that the thickness of the formation in this section cannot be less than 2000 feet.

"It is proposed to call this stratified series of andesitic tuffs and breccias the San Juan formation, as it clearly plays an important part in the make-up of a large portion of the San Juan Mountains. The texture of the San Juan beds varies from a thin-bedded, fine-grained tuff, containing no large fragments, to a tuff breccia, consisting of large sub-angular blocks embedded in the finer-grained matrix. The proportion of large fragments varies a great deal, but I have not seen the formation to be made up of large fragments exclusively at any point, although where it is indurated in proximity to some of the large diorite stocks, and in near the mineralised areas, it has the appearance of a massive breccia. The upper limit of the San Juan formation may not be always clearly definable. In the mountains about Marshall basin it is, however, very sharply defined by the appearance of the first massive lava-flow of augite-andesite."

The Smuggler vein is remarkable for its continuity and regularity. It crosses the water shed of Cañon Creek, a tributary of the Uncompahgre, and Marshall Creek, which runs into the San Miguel at Pandora, at an altitude of 13,200 feet, at which point the thickness of the rocks of igneous origin might be roughly estimated at 3500 feet, since Marshall Creek exposes the underlying conglomerate in nearly horizontal position at an altitude slightly less than 10,000 feet. The vein is plainly visible upon the surface, where it crosses the divide, and cuts through

the rhyolite and augite-andesite down into the andesite breccia to within only a few hundred feet above the conglomerate, as it crosses Marshall Creek. What the character of the vein may be after passing into the conglomerate and sandstone is not yet determined. It will be many years before any of the mines of Marshall basin reach the horizon of the conglomerate.

Only two cross faults occur in the entire length exposed by underground workings. The first is at a point near the south end of the property, and is caused by a large quartz vein, the Pandora, containing gold, but little or no silver. It dips 45° to the south. The plane of fault is nearly at right angles to the course of the Smuggler vein, and the movement of this fault, as shown on the map in plan, is about 50 feet. The second fault of only a few feet is made by the Revenue vein, which, crosses the Smuggler vein at an angle of about 15°, and is as well-defined as the latter. This vein is now being developed and is very easily worked, owing to the decomposed state of the ores it contains. It carries less gold and more lead than the main vein. The course of the Revenue is indicated clearly on the map in plan. The deep tunnel follows this vein for some distance as a matter of economy in reaching the shaft.

The Smuggler vein is probably a fault fissure. Both the hanging and the footwall show large polished surfaces. Striation is very frequent, and gouge matter, several inches in thickness, occurs in places upon the hanging as well as the footwall. Yet, although this is largely the case, long distances occur where the quartz, which almost exclusively forms the filling of the vein, shows no parting whatever from the country rock. To use a miner's expression, it is frozen to the walls.

The average thickness of the vein is about 5 feet, seldom narrowing to less than 2 feet, and rarely widening to as much as 10. Enclosures of country rock are frequent, sometimes as fragments, and more frequently in continuous masses between bands of the lode. Cavities are rare, and no such structure occurs as is seen in some veins where corresponding minerals are found at each wall, and others succeed in conformable layers towards the centre. In the Mendota claim a mass of andesite several hundred feet in length and 30 or 40 feet in thickness divides the vein, or, as is usually expressed, the lode forks and comes together again in several hundred feet. This is the only point in the workings where such an occurrence is met with, except on an exceedingly small scale, when a stringer leaves the vein for a few feet only. Associated with quartz, rhodochrosite occurs in places and imparts a pinkish colour to certain bands in the vein, which are sometimes nearly a foot in thickness and very regular for many yards. When this mineral is present in sufficient quantity to colour the vein, that portion is seldom rich in the precious metals. Very small quantities of calcite, brown spar, and heavy spar also occur.

To give an idea of the chemical composition of the gangue, I would call attention to the accompanying analysis made from a monthly sample of the material going to the mill. This is only to indicate the gangue matter, and shows how completely quartz predominates. The appended analysis of the concentrates, which still contains nearly one-half gangue, is intended to give some idea of the constitution of the ore.

Battery Sample, April.

ASSAY.		Oss. per ton.	
Au ..	..	..	0.02
Ag ..	..	..	19.10
ANALYSIS.		Probably combined as	
Per cent.		5000 tons;	
Insoluble ..	80.26	SiO ₂ ..	70.43
Al ₂ O ₃ in insol. ..	8.52	FeS ₂ ..	8.57
SiO ₂ ..	70.42	Fe ₂ O ₃ ..	8.64
Total Fe ..	5.20	MnCO ₃ ..	1.49
Fe as Fe ₂ O ₃ ..	2.55	Al ₂ O ₃ ..	9.44
Mn ..	0.81	CaCO ₃ ..	3.44
Total Al ₂ O ₃ ..	9.94	MgCO ₃ ..	0.96
CaO ..	1.98	ZnS ..	1.02
Mg ..	0.28	PbS ..	0.07
Zn ..	1.02	Cu ₂ SO ₄ ..	0.15
Pb ..	0.66	..	..
Cu ..	0.06	..	..
S ..	3.77	..	..
Alkalies undetermined.			

SCREEN ANALYSIS.

Mesh.	Per cent.	Oss. per ton.	Ag.
On 20 ..	0.02	..	7.68
" 40 ..	18.17	0.25	8.32
" 60 ..	18.93	0.66	10.17
" 80 ..	9.40	0.83	10.90
" 100 ..	4.93	1.20	11.07
" 120 ..	4.96	0.93	12.33
" 150 ..	9.04	1.13	12.61
Over 150 ..	34.55	0.51	..

NOTE.—No tellurium or antimony was found.

Concentrates, April.—Lots 197 to 259.

ASSAY.		Oss. per ton.	
Au ..	..	..	2.73
Ag ..	..	..	50.43
ANALYSIS.		Probably combined as	
Per cent.		5000 tons;	
Insoluble ..	46.26	SiO ₂ ..	30.20
Al ₂ O ₃ in insol. ..	4.84	FeS ₂ ..	20.99
SiO ₂ ..	39.92	Fe ₂ O ₃ ..	4.51
Total Fe ..	15.85	MnCO ₃ ..	0.90
Fe as Fe ₂ O ₃ ..	3.15	Al ₂ O ₃ ..	4.43
Mn ..	1.68	CaCO ₃ ..	2.27
Al ₂ O ₃ ..	6.20	MgCO ₃ ..	..
CaO ..	2.51	..	..
Mg ..	0.65	..	..
Ba ..	0.00	..	..
Zn ..	3.98	ZnS ..	0.94
Pb ..	3.28	PbS ..	0.51
Cu ..	0.18	Cu ₂ SO ₄ ..	0.04
As ..	0.34	As ₂ S ₃ ..	..
Sb ..	0.00	..	..
S ..	16.82	..	..
Alkalies undetermined.			

SCREEN ANALYSIS.

Mesh.	Per cent.	Oss. per ton.	Ag.
On 20 ..	0.18	2.13	24.63
" 40 ..	9.53	4.35	41.97
" 60 ..	6.95	5.66	44.97
" 80 ..	4.83	5.06	46.93
" 100 ..	3.35	8.53	49.93
" 120 ..	5.84	2.63	49.93
" 150 ..	9.90	1.26	49.93
Over 150 ..	50.92	..	..

ASSAY SAMPLE, LOT 339.

ASSAY.		Oss. per ton.	
Au	51.72
Ag

I am indebted to Mr. F. Roesser, chemist of the Omaha and Grant Smelting Works at Durango, for the above analyses. The minerals occurring are pyrite, chalcocite, galena, sphalerite, and the arsenical silver minerals. — *Proceedings of the American Institute of Mining Engineers.*

* Read before the American Institute of Mining Engineers.

polymerite have been determined, and probably nearly all of the argentiferous minerals occur. No specimens of tetrahedrite have been recognised. Metallic silver is very rarely encountered. Metallic gold is more frequent, although unusual. The remarkable feature of the vein is the regular and continuous distribution of the ore, which generally lies near the footwall. The usual occurrence is a few inches of richer ore (so-called "chutes") and a foot or two of banded structure, more available for concentrating, which goes to the mill. So constant is the occurrence that over a mile has been worked along the vein on various levels without meeting any part where the ore is not present in sufficient quantity for continuous stoping. One remarkable feature is the constant increase of gold value towards the south throughout the entire workings, and the corresponding decrease in silver value in the same direction. Where the vein crosses the divide, at the extreme north end of the property, the gold value is hardly one-quarter that of the silver. The transition from silver to gold is almost constant, until, a mile from the divide, the vein practically becomes a gold lode. This change does not correspond to depth gained by slope of mountain, towards the south end of the property; for on the north side, at a corresponding altitude, the vein contains gold to the extent of only a few per cent. of its total value.

The levels on the vein have been run heretofore 100 feet apart, and are timbered with stulls, upon which lagging, to support the waste produced in stoping, is placed. The stull supports are set into the foot and hanging wall at right angles to the dip, and are about 14 feet long and as many inches in diameter. The work of exploitation is carried on by stripping in country rock on the hanging wall to some 7 feet in height, and then shooting down the vein in mass, to be broken and passed into chutes with little or no sorting.

An important change has recently been introduced in the construction of these chutes, which has made it possible to use timber in spite of the passage of heavy and sharp rock, until a height of even 250 feet has been attained; thus saving the great expense of running and timbering drifts at every hundred feet. The levels in future be 200 feet and more apart. The change in construction is locally a new departure, and consists in simply placing the timbers used in the building of chutes (mills) so that the end will be cut into, instead of the sides, which are soon cut out. The old "mills" were built like a log house; the new are constructed of short mill timbers, and for the first 100 feet are built with ends presented to the falling rock.

From the chutes ore is hauled by mules to the shaft, in cars containing about 1 ton each. From the collar of the shaft, which starts on the third level, the distance down to the tunnel is 700 feet; and all ore is lowered to that level. From the bottom of the shaft a train of 12 cars is hauled to the sorting house at the head of the tramway. A very rough hand-sorting house takes place while the ore is being filled out of the chutes over aprons into cars, which load into tram-bins. About 10 to 15 per cent. of high-grade ore is thus selected for shipping, and goes over the tram direct to the railroad and then to the smelter.

From the sorting house the lower grade ore is transported over a Belcher tramway, at a cost of about 25 cents per ton, to the mill. The tramway is 1 mile in length; the alignment being straight and the inclination about 20°. Fourteen towers support the standing cable, the longest span of which is 1200 feet. The traction cable is $\frac{3}{4}$ inch and the standing cable $\frac{1}{2}$ inch in diameter. The buckets used are 35 in number, and contain 600 lbs. each. The monthly capacity of the mill is 5000 tons; and this amount the tramway delivers in 10 hours daily, which is far above the guaranty of the makers. The total cost of the wire tramway was \$30,000. It is only fair to say that it has given the greatest satisfaction, and cannot be too highly recommended for the transportation of ore, particularly in mountain regions, where other means are difficult and expensive.

Upon arrival at the mill, the ore is broken to a suitable size through a Blake crusher, and is thence carried by automatic feeder stamps, which crush to 14-mesh. This entire product is passed over Triump and Frue tables, producing about 15 per cent. of concentrates, which contain an excess of silica, as the analysis already given shows.

No further method of concentration is used, except that a rough sizing of the tailings from the vanners is made; the coarser part, which will not pass through a 40-mesh screen, being reground in a Huntington mill, and then retreated on a second series of vanners. A detailed description of the mill would be uninteresting. The stamps and mortars used are of similar construction to those in general use for gold milling on the Pacific Coast. The stamps are 800 lbs. in weight, and drop 6 inches, with 95 drops to the minute. The 50 stamps crush 150 tons daily.

The above seems to be a very crude process of concentration; and the resulting loss is startling, being nearly 20 per cent. of the gold and fully 40 per cent. of the silver contained. The average contents of the milling ore for the past year has been slightly over $\frac{1}{2}$ ounce gold and 12 ounces silver per ton. The minerals associated with the precious metals are so disseminated in the gangue that, unless very fine crushing is resorted to, little concentrating material is liberated. Preliminary experiments have been made with a view to reducing the ore to proper size by rolls, thus avoiding an excessive quantity of finely-divided material. (See screen analysis given above.) A crushing to which size permitted a concentration in jigs, showing very rich headings; but even with crushing to the size, only small percentages of the precious metals was obtained by jigs. It was found necessary to recrush the resulting tailings and middlings very fine, in order to liberate the minutest particles of ore contained. Hence from an economic point of view, it has not seemed advisable to introduce rolls and jigs, in connection with stamps, to effect so small additional saving.

During the past few years transportation by pack train has given place to the tramway, thus saving many dollars per ton. The ore is delivered from the mouth of the tunnel, opened far below the deepest working. Operations in the mines are conducted on a large and economical scale; but the startling loss by concentration still goes on, and over 30 per cent. of the precious metals goes daily down the San Miguel River. No important progress is being made in this direction to correspond with the great saving effected in other branches of the business.

FRONTINO AND BOLIVIA.
The directors have received advices from Mr. John Penberthy, dated August 22 and September 10. Also a letter from Messrs. Langley, dated August 12. The statement for the month of August is as follows:—2573 tons produced (bullion) 3626 ozs.; tributers' gold produced (bullion) 135 ounces; total, \$290 18s. 9d.; estimated value of the gold and sulphurets, \$2800 1s. 6d.; cost at the mines, Medellin, and in London, October 6 the directors received a cablegram from Mr. Penberthy to the following effect:—"Value of September gold and sulphurets, \$10,540; estimated cost, including London payments, \$2430; estimated profit, \$5110."

THE DIRECT METHOD CONSIDERED AS THE FUTURE METALLURGICAL TREATMENT OF COPPER ORES, ARGENTIFEROUS OR OTHERWISE.

By CHRISTOPHER JAMES.

Introduction.

ON December 20, 1893, a paper was read before this Institution by Mr. Claude Vautin, on the "Direct Method of Producing Refined Copper." At that time the method was in its infancy, and since then many important developments have grown therefrom. Further, the discussion which followed indicated that some desirable explanations were not then forthcoming. Hence the preparation of the present paper.

It might have been expected that during the three years that have since elapsed the method would have received general approval, and become adopted in all our important copper smelting establishments. Mr. J. H. Collins said:—"I am very sorry there is not some copper smelter present to deal with Mr. Vautin's very interesting little paper. To me the new process seems extremely simple, and I wonder why it was not found out before; but I cannot help a sort of suspicion that there must be a little more to be said against its general use than appears just at present."

This appears to call for a further treatment of the subject, and on a more extended scale, which is attempted to be met in the present paper.

The history of most inventions that involve a great divergence from ordinary practice, or a radical change in old-established notions, shows the same slowness of general acceptance, and it is often only after a long and persistent struggle on the part of the inventing pioneers that the arts derive the full advantage of the new process. This is especially true in this country and in the metallurgical industry. The English works' proprietor is very conservative, and loth to leave old lines. The works' manager, even if he be an intelligent metallurgist, is still unwilling to make the effort which a radical change in his procedure might involve, and the workman is always jealous of changes, and will fight against them to the best of his power until obliged to give in.

From this point of view, then, it is not so much to be wondered at that the direct method experiences a tardy acceptance.

In the discussion referred to, Mr. D. A. Louis evinced the same love for the old process, although he only knew it probably as an onlooker, yet he dreaded the innovation of a new method which should render unnecessary such an extremely interesting process with its various accompanying phenomena; surely then it is easy to understand that a man who has practised the process for years, and become wedded to it, so to speak, should be loth to give it up.

It is for these reasons, therefore, that it has been deemed advisable to bring this further paper before the Institution. It is felt that there is considerably more to be said in favour of the process than has yet been said. It is desired that the widest discussion shall be challenged on behalf of the process, that every metallurgist in the world who deals with regulus or matte in any form shall be invited to consider its claims, and to urge every possible objection against it, that its pioneers may have the opportunity of openly meeting those objections and of refuting them.

With the object of making this paper complete in itself, and of rendering every detail of the new process perfectly clear, and the changes which its adoption would involve perfectly understandable, some trouble has been taken to give a condensed view of the old Welsh method of copper smelting, together with the variations which Continental practice and American practice have superimposed upon that old method.

It is hoped that the merits of the new method will now be perfectly recognised without the further assistance of a practical copper smelter.

The Welsh Method of Copper Smelting.

This method is most conveniently studied under the usual six headings that mark off the six successive operations; although depending on the character of the ores treated, and of the special requirements of the copper to be produced, some of these operations may be omitted in practice, and supplementary operations may be introduced; such variations in the method as the omission of one or more of the six operations, or the addition of special treatments, may entail, will be discussed in the sequel.

In all cases, the characteristic feature of the method, as a whole, is that reverberatory furnaces only are employed throughout.

The following are the six operations involved in the typical old Welsh method:—

- Calcination of the ore.
- Melting for coarse metal.
- Calcination of the coarse metal.
- Melting for fine metal.
- Roasting.
- Refining.

Before proceeding to the description of these six operations *separatim*, it will probably be desirable to point out that the fuel used in a Welsh copper smelting establishment, for all its furnaces, is a mixture of about two-thirds non-caking bituminous coal, "free," and one-third of caking bituminous coal, "binding." Large coal is never used, but only the screenings left after the lumps have been separated for house purposes. It is, therefore, very low in price, from 5s. 6d. to 6s. per ton. To prevent the small coal from falling through the bars of the grate a bed of slag or clinker is allowed to accumulate on the bars, and the fire rests on this bed of clinker. This is what is called a slag grate. Fires are produced and maintained in this bed of slag by the workman by means of a bar, to admit the necessary air, and this admission is regulated by opening or closing the fissures by the same bar, used as a lever, the fulcrum being a strong bar of cast iron, built in just below the grate. Slag is, of course, constantly accumulating on the top of this slag bed, although some continually drips from the open fissures, so to maintain a constant thickness of about 16 to 20 inches, fragments are broken off from below, and the success of the operation largely depends upon the skill of the workman in manipulating his grate, and long practice is necessary to acquire this skill.

The quantity of fuel used will also depend upon the proper treatment of the slag grate. An unskilful workman will easily waste half his fuel—that is to say, he will use double the average quantity required. The advantage of a technical knowledge of the principles involved in combustion tells especially in the proper grating of a fire.

The actual depth of the fire itself above the slag grate will depend upon the quality of the coal used and the temperature required, the average depth aimed at being about 25 inches.

A large quantity of carbon monoxide is always produced in these fires, especially those of the melting furnaces, and this carbon monoxide becomes burnt in the laboratory part, and channels are often constructed to admit the air necessary for this combustion. The flame of burning carbon monoxide is really the principal source of heat in an ordinary copper smelting furnace.

Calcination of the Ore.—The laboratory part of a calciner furnace is rectangular in form, provided with a flat bed, paved with bricks, and two doors, or sometimes three, on each side, opposite each other.

The charge is placed in a hopper on the roof, where it becomes dried. It is charged into the furnace by withdrawing a slide at the bottom of the hopper. The furnace is discharged through a hole in the bed near each door. The calcined ore is raked to this hole and allowed to drop into a vault below.

The furnace lasts a long time without repair, as the heat is never very great.

The ore has to be crushed, but it need not be very fine, as it is only intended to remove a portion of the sulphur. The charge con-

sists of 4 tons of crushed ore. It is spread over the bed of the furnace to a depth of about 4 inches, and the doors closed until the charge has become sufficiently heated, care being taken not to drive the heat so far as to clog the material by partial fusion. After about two hours the charge is completely turned over by paddles, which operation is repeated once or twice during the progress of the calcination. At the end of 12 hours the charge is withdrawn.

The ore which has to undergo this calcination contains copper pyrites, with a considerable proportion of iron pyrites, and the object of the calcination is to remove such sulphur as is present in the form of iron pyrites, so that, when melted, a regulus of from 30 to 35 per cent. of copper shall result. At the same time oxide of iron is formed, which serves in the subsequent melting as a flux to melt the silica contained in the ore.

The sulphur escapes chiefly in the form of sulphur dioxide into the atmosphere, where, of course, it becomes a nuisance to the inhabitants and disastrous to neighbouring pastures; not only so, but it is a positive waste of a valuable product. Modifications will be indicated presently whereby much of this sulphur dioxide is utilised for the manufacture of sulphuric acid. But still, in the Welsh method, wherever adopted, much sulphur dioxide is sent into the atmosphere. True, it may not always pay to adopt such variations as would retain the whole of the sulphur in the establishment, but it is also true that little effort has been made towards devising such plant as might pay, and even in cases where the saving of the gas would manifestly lead to profit, nothing has been done in that direction.

(To be continued.)

COAL PRODUCTION IN UPPER SILESIA.—A despatch, dated September 5 last, has been received at the Foreign Office from Sir Frank C. Lascelles, Her Majesty's Ambassador at Berlin, reporting that an article in the *North German Gazette* of the 2nd inst. gives the following extracts from the annual report of the Oppeln Chamber of Commerce, in regard to the coal production of Upper Silesia during the year 1895. As compared with the preceding year, the output of coal has increased by 5 per cent., equal to 867,988 tons, and the falling-off which began in 1892 has now been made good. The total of 18,063,906 tons exceeds by nearly 2 per cent. the output of 1891, which had hitherto been the highest. As compared with 1887, the increase amounts to 38 per cent. The total sales have increased almost to a corresponding degree—viz., by 771,504 tons, or $\frac{1}{2}$ per cent. It is important to note that nearly the whole of this increase (94½ per cent.) is sent abroad. The sales within the district of Oppeln have increased by 5 per cent., while the sales of Upper Silesian coal in the rest of Germany decreased from 1894 to 1895 by about 1½ per cent., and in the last four years by not less 9½ per cent. The increase in exportation is chiefly to Austria-Hungary, but the consignments to the Baltic ports have decreased. While the importation of English coal increased from 1893 to 1894 by 9 per cent., and from 1894 to 1895 by 15 per cent., the transportation by rail of Upper Silesian coal decreased in those two periods by 0.5 per cent. and 0.3 per cent. respectively. Compared with the figures for 1890, the transportation by rail of Upper Silesian coal had increased in 1895 by 6 per cent. only, while the importation of English coal had increased by 62 per cent. In the Berlin market the consumption of English coal increased from 189,304 tons in 1894 to 230,501 tons in 1895, or by 21.7 per cent., and that of Westphalian coal from 84,917 tons to 100,909 tons, or by 18.8 per cent., whereas the consumption of Upper Silesian coal decreased by 79,727 tons, or 8.3 per cent. In 1890 Upper Silesia provided 72½ per cent. of the coal required in Berlin, in 1895 only 62 per cent.; on the other hand, the English coal used increased in the same period from 7½ per cent. to 16 per cent. of the whole consumption, and the Westphalian from 6 per cent. to 7 per cent. The Oppeln Chamber of Commerce attributes this unfavourable development of the Upper Silesian coal industry to the high rates of railway freight against which it had to contend, as compared with the cheap water carriage to the Baltic ports enjoyed by England, and the facilities afforded to Westphalian coal by the combined water and railway carriage *via* Hamburg. The Chamber is of opinion that the reduced rates of freight for Silesian coal going to Stettin and Swinemünde which were introduced on March 1 last will have a good effect.

LAKE VIEW CONSOLS (LIMITED).

The gold obtained from the two crushings announced on July 1 and 14:—"1508 ounces have been received and sold in London for £6315, being at the rate of £4 3s. 9d. per ounce. We are informed that Colonel Lewis Vivian Lloyd, J.P.D.L., director of the London and North-Western Railway Company, has joined the board of the Cheque Bank.

COMPANIES AND LEGAL ANNOUNCEMENTS.

THE NUNDYDROOG COMPANY (LIMITED).

6 and 7, Queen Street Place, London, E.C., 23rd October, 1896.
AT A MEETING of the DIRECTORS held this day, it was RESOLVED—
"That an Interim Dividend (free of Income Tax) of 2s. per Share be, and is hereby, declared, payable on the 21st day of November, 1896, to the Shareholders on the Books of the Company on the 31st instant, and that the Transfer Books be closed during the said 31st instant."
By Order of the Board,
I. CROCKER, Secretary.

N.B.—The above Dividend, together with the 2s. per Share paid on 18th July last, will make the sum distributed out of the profits made for the first eight months of the Company's financial year 4s. per Share, or 20 per cent. upon the Nominal capital of the Company for that period, as against 15 per cent. for the corresponding period of 1895.

ANDREW ROBERT HAMMOND, deceased.—Pursuant to the Statute 22nd and 23rd Victoria, chapter 36, intituled "An Act to further amend the Law of Property, and to relieve Trustees," NOTICE IS HEREBY GIVEN, that all CREDITORS and other persons having any Debts, Claims, or Demands against the Estate of ANDREW ROBERT HAMMOND, late of Bulawayo, South Africa, but formerly of the City County and State of New York, in the United States of America, Mining Engineer, deceased, who died on the 29th day of March, 1896, and to whose Estate and Effects Letters of Administration were granted to Frederick Caeceby Holland, of 20, Bishopsgate Street, in the City of London, Esquire, the lawful Attorney of Katherine Rath Hammond, the lawful widow and relict of the said deceased by the Principal Registry of the Probate Division of Her Majesty's High Court of Justice, on the 1st day of October, 1896, are hereby required to send particulars in writing of their Debts, Claims, or Demands to or, the undersigned, as Solicitors for the said Administrator, on or before the 10th day of April, 1897. And Notice is hereby Given, that at the expiration of that time the said Administrator will proceed to distribute the Assets of the said deceased among the parties entitled thereto, having regard only to the Debts, Claims, and Demands of which he shall then have notice; and that he will not be liable for the Assets or any part thereof so distributed to any person or persons of whose Debt, Claim, or Demand he shall not then have had notice.
PALMER ELAND and NETTLESHIP,
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Dated this 19th day of October, 1896.

* A paper read before the Institution of Mining and Metallurgy.

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Telegraphic and Cablegraphic Address: "TUTWORK, LONDON."

Codes used: "A.B.C.," "Moreing's," and "Universal"

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LONDON: OCTOBER 24, 1896.

LABOUR CONDITIONS IN COAL MINING.

THE latest volume of the "Mineral Industry," to which we had
last week the pleasure of directing our reader's attention,
contains a very interesting article on "Labour, Wages, and
Accidents in Mines"; this, although obviously and admittedly im-
perfect, is yet the most serious attempt that we have yet seen, at
collecting and collating the labour statistics that have reference to
coal mining in the United States, and the task of examining the
figures so obtained, and of comparing them with those of this
country will, we believe, be found to be both interesting and
instructive. There are many difficulties in the way of obtaining
anything like reliable figures regarding American coal mining.
In the first place, we are dealing, not with a small compact
country like our own, but with a huge Continent, over which
the various coal fields are scattered at enormous distances apart,
whilst the nature of the coal raised, the physical and economic
conditions of the coal fields, the characteristics of the labour
available, the habits and customs of the district, the climate
and surrounding conditions, the prices of the necessities of life,
in a word, all the circumstances that influence the manner and
cost of mining, are very widely different, and diverge indeed
in some cases more from each other than some of them

do from those obtaining in some of our coal fields. This
circumstance alone makes the striking of averages a difficult
matter, and deprives the results so obtained of some of their
value as a basis of comparisons. Again, legislation in the
United States, as far as it affects coal mining and coal miners,
is very different from what it is in this country. The former
State being a glorious, free, and independent Republic, whilst
ours is only an effete Monarchy, no one who has studied prac-
tical politics, and whose views are not blinded by respect for
verbal definitions, will be surprised to find that the life of the
labourer is held very cheap in America compared to what it is
in this country, and that the law there takes comparatively
little cognisance of the accidents that may befall the miner en-
gaged in his work. In Great Britain, on the other hand,
statistics of accidents are collected with scrupulous care, and
upon the results of their tabulation legislation has been founded
to try to protect the miner as far as possible from accidents,
both those inseparable from his calling, and those due to his
own recklessness. The only point in which the laws of both
nations seem to agree is in safeguarding to the miner as com-
pletely as possible his precious right of combining, striking,
and otherwise injuring, as effectively as may be, the industry
upon which he depends for his bread.

There are, then, great difficulties in the way of instituting a
fair comparison between the two nations whose importance as
coal producers may be estimated from the fact that the United
States and United Kingdom together produce about 64 per
cent. of the world's total output. The first point to
be considered is the amount of the production of
the two nations. Great Britain produced from her
coal mines in 1895 a total of 189,652,562 statute tons of coal;
a small item of 8800 tons was produced from quarries—i.e., open
workings under 20 feet deep, but this item we will not include,
so as not to complicate the labour question, when we come to
consider the latter. Now, of the above amount 2,072,210 tons
were anthracite coal; the average value of the latter variety at
the pit's mouth was about 7s. per ton, the average value of the
bituminous coal under the same conditions being just about 6s.
per ton.

In 1895 the total production of the United States was
195,761,332 short tons of 2000 lbs., equal to 175,679,760 statute
tons. Out of this amount the anthracite production was
58,362,985 short tons, or 52,109,808 statute tons, or about 30 per
cent. of the whole, instead of a little over 1 per cent., as in this
country. The average price of anthracite at the pit's mouth
during 1895 works out to \$1.54 per short ton, or about 7s. 3d.
per statute ton, whilst the bituminous coal is stated to be
worth \$0.91 per short ton, or 4s. 3d. per statute ton.
The latter figure is, of course, subject to wide
fluctuations. In Pennsylvania, which is by far the most im-
portant coal-producing State of the Union, its output including
nearly all the anthracite, and 38 per cent. of the bituminous
coal, or 56 per cent. of the total coal output, the price of
bituminous coal is averaged at \$0.71 per short ton, or 3s. 4d.
per statute ton. The next important producers are Illinois
with about 9 per cent. of the total, Ohio with 7 per cent., and
West Virginia with a little over 6 per cent.; in these the price
average from \$0.92 to \$0.70 per short ton, the total average
figure being really raised to what may be called an abnormal
height by the exorbitant price charged in some of the
more remote coal-producing States, where long distances and
high freights preclude competition from other coal fields on a
fair basis. If we were to eliminate these unfairly high prices,
we should probably find the value of American bituminous coal
at the pit's mouth to be about 3s. 6d. to 4s. per statute ton, or
less than two-thirds of the cost of English coals under similar
conditions. Seeing that 1895 was looked upon as a fairly good
year by American coal miners, whilst in this country both
masters and men had reason to consider it as one of the worst
experienced for very many years past, this great difference in
price means even more than it seems at first sight. Let us
add that America is a protectionist nation, and that all the
necessaries of life are, therefore, supposed to be dearer in
America than in England, and it is obvious that the problem
thus presented is one that deserves careful study.

It may be pointed out that royalties, &c., play a com-
paratively small part in this question; they are, perhaps, lower
upon the whole in America than in England. Exceptionally in
Illinois they are in some cases as low as 4d. per ton, but in the
Pennsylvanian anthracite region royalties and rentals are
averaged as quite 1s. per ton. In Great Britain royalties and
wayleaves range from 3d. to 1s. 3d. per ton, averaging about 6d.
per ton, so that the difference in this respect between the two
countries is less than might have been anticipated, though,
perhaps, slightly in favour of America.

The number of men engaged in coal mining in Great Britain
cannot be exactly ascertained. In the Official Summaries of
Statistics, we find the total number of men engaged in the mines
that come under the Coal Mines Regulation Act all grouped
together, and in practice it would be most difficult to discriminate
when, as sometimes happens, coal, fireclay and ironstone are raised
from the same pit, and a miner may be getting one mineral on
one day, and another on the next. The total output of all
minerals from mines under this Act is given as 201,738,351
tons for 1895; out of this amount only about 12,000,000
tons are not coal—or (say) 6 per cent. of the total. It
may fairly be assumed, therefore, that if we were able to sepa-
rate exactly the number of men engaged in raising the other
minerals besides coal from the number of those mining coal,
the results would not be very different from those given in the
Summaries for Statistics. These show that there were engaged
under the Act no less than 564,638 men below ground, and
135,646 above ground, or altogether 700,284 men of all descrip-
tions. The production of mineral per head per annum is given
as 367 tons calculated on those below ground only, and as
288 tons calculated on all above and below ground. It may be
mentioned that these figures do not differ very widely from
those obtained in immediately preceding years. Unfortunately,

many points upon which information is desirable in order to enable us to complete an exhaustive survey of the position, are not touched upon in the summaries of statistics, and can only be roughly approximated. The number of days per week worked for the average in the various coal fields of the United Kingdom was probably between $4\frac{1}{2}$ and $4\frac{3}{4}$, so that the number of working days per annum may be taken as about 240; in other words, for each man (surface and underground) there were produced 1.2 tons of coal per working day. Wages may be roughly averaged at £1 per week, although this figure is probably rather too low if coal, house rent and other allowances are included, as they should be. Even so, however, each ton of coal will have cost in wages alone somewhere about 10s. 7d. per ton, or, roughly, about the value of American coals at the pit's mouth.

For America, figures are even more difficult to arrive at. The article in the "Mineral Industry," to which we have referred, gives some labour statistics for the year 1894, those of 1895 being apparently not yet available. From these it would seem that in the bituminous coal mines of Pennsylvania there were employed in that year 73,551 men underground, and 12,667 at the surface, a proportion of about 1.8 instead of being 1.5 as in this country. The total for Pennsylvania for 1894 was thus 86,218 men, and they produced 41,867,188 short tons, or 478,418 long tons of bituminous coal in that year, being at the rate of 509 tons for each man working underground, or 433 for every man employed at the surface and underground. Reliable statistics for the whole of the United States are not obtainable, but from the figures here given it would seem that quite 410,000 men must have been employed in and about the coal mines of the United States in 1894, and that they produced 169,375,781 short tons, or 161,674,805 short tons. This would make the output per man per annum in the United States equal to 370 tons, or nearly one-third more than that of the English follow worker, in spite of the fact that we have included the figures obtained in the anthracite coal trade, which are obviously far less favourable than those of bituminous coal mining alone. Had we taken the latter only into account, the result would not have been very far from 400 tons per head per annum. Even more extraordinary do these figures appear when the number of days worked is taken into account. In the bituminous coal mines of Pennsylvania the number of days worked per annum is given as 149 in 1894, so that the output per man per diem in that year was 2.9 statute tons, or just about two and a-half times as much as the average output in this country. It is difficult to get at a fair average for the United States, but taking the more important coal fields, it would seem that 165 days were worked on the average in the year 1894, so that the output per man per diem for the whole of the United States would be about 2.3 tons, or nearly double that which we obtained similarly for Great Britain. A rough estimate of earnings, which is all that the information supplied by the Mineral Industry (a great deal of which is not more recent than the last census year—namely, 1889) admits of, would seem to show that the average annual earnings of the man, taking surface and underground workers together, would be about \$1.00, or (say) 6s. 8d. per day. This would make the average cost of a ton of coal in the United States somewhere about 2s. 10d. Of course, these figures are merely approximations, and rough ones at that. The cardinal point that comes out with startling distinctness is that the American coal miner is twice as good a man as his British fellow-worker, as measured by their respective outputs. Of course, the general conditions of mining are immensely in favour of the former. The American deposits have only been opened up in, comparatively speaking, recent times; and have, therefore, all the advantages obtainable from modern machinery and modern methods of working and laying out the mines. Moreover, in this country some of the best seams—that is to say, some of those that are the deepest and the easiest to work—have been to a great extent exhausted, and seams less economically advantageous have now to be attacked. In a great many of our pits the working face is now very far in-by, and the men have to lose a good deal of time in getting to their work. All these are disadvantages that the older mining country must inevitably suffer from. But we do not think that the conditions we have enumerated, and a few other less important ones that might be mentioned, can possibly suffice to account for the vast difference shown above in the respective producing capacities of the two countries. We are rather disposed to attribute this to the action of the miners' unions in this country. These, directly or indirectly, make it their business to limit the output per head, with the object of keeping more men employed, and of keeping up the rate of wages. That it suits the unions themselves, and, above all, the interests of those who "run" the unions, that their roll of membership should be as long as possible, is obvious enough. But when, in attaining these ends, they are employing methods that threaten to cripple, and ultimately to destroy, the industry that supports them, such a policy would seem to be a short-sighted one. The United States is not yet an exporter, whereas we export about 22 per cent. of our output. There seems, however, to be nothing to prevent America competing with us in a few years' time in the various markets of the world; and though freights will in a number of cases be in our favour, the figures we have quoted show at how great a disadvantage the British coal-producer will then be placed.

As regards accidents in mines, it would seem that the British miner is rather better looked after than the American. The deaths in and about mines from all causes are given as 1.488 per 1000 persons employed in Great Britain, whilst for the whole of the United States they are given as averaging 2.98. It is true that it is not quite a fair comparison again, because it includes both the bituminous coal and the anthracite mines. These latter are much the more dangerous to work in, due chiefly to the great thickness, the steep angles of inclination, and the shattered condition of

much of the coal. Hence it is that the death rate in the anthracite mines of Pennsylvania is 3.19 per 1000, whilst in the bituminous coal mines of that State it is only 1.42. As the American output of coal *per capita* is so much greater than it is in this country, the number of tons of product per life lost comes to about the same in both countries. It is, at any rate, abundantly clear that the British coal miner is very well looked after, and that the law does, as it should do, everything that is (humanly speaking) possible to secure his safety. He might do well to keep this fact prominently before him, and to remember that greater safety to the miner means greater outlay to the coal owner, whilst this outlay can only be met in the face of the world's increasing competition by a larger output of coal for each man employed. Matters are distinctly bad in our coal trade just now, although the outlook is not quite as gloomy as it was some months ago, but it will require cordial and earnest co-operation between coal miners and coal owners if the possible improvement is to become a substantial reality.

BRITISH GUIANA.

THE colony of British Guiana, both in its industrial and political aspects, has come once more prominently before the British public. The circulation of the report drawn up by the Commissioner of Mines is responsible for a revival of interest in the mining of the colony, while the much discussed speech of Sir EDWARD CLARKE has led to a reawakening of the Venezuelan difficulty with all its collateral complications. Those who are closely interested in the colony's material prosperity will be glad to learn that, on the whole, the condition of the industry is abundantly satisfactory in character. There is, it must be admitted, a small falling-off in the actual product figures, as compared with those of the previous year, but the general condition of gold mining is described as being "healthy and vigorous." A satisfactory explanation of the retarded output has been afforded. The rainfall, it seems, was less plentiful during the period in question, which interfered considerably with the working, and exerted a depressing effect upon the production figure. The stress of harder times, however, led to increased activity and greater resource on the part of the owners and managers, so that a smaller output has to some degree been counterbalanced by an increased profit. In other countries the reduction which was made in the wages rate might have led to a labour difficulty, but in Guiana the men had the wisdom to recognise the necessity of the abatement, and the matter was smoothly adjusted. The leading feature of the past year's working appears to have been a revival in placer mining. All the development that was expected from quartz mining has not been realised, owing, it is said, to a lack of capital; but the energy which might have been devoted to the industry in its more permanent form has been diverted to the placers with good results. A distinct improvement has taken place in the methods pursued by the alluvial workers, with the result that the waste, which in the early days proportioned something considerable, has now been reduced within the narrowest possible limits. The best effect of the increased efficiency in the working has been that several formerly productive placers which it was customary to regard as having been worked out, have been attacked with greater energy and a better method, with the result that gold far exceeding expectation has been won from them. Among the evils which afflict quartz mining in British Guiana must be reckoned the propensity among a certain class of speculators to grab as many claims as they can, with the object, not of developing them, but holding on until a fat price can be snatched from some expectant capitalist. It is proposed to obviate this by attaching certain labour conditions to the claims, which will make it impossible for large slices of auriferous territory to be idly held. Some such step has, it is obvious, become necessary if the available territories likely to prove of mineralogical value are not to be greatly diminished. From all points of view it is pleasing to note that considerable advancement has been made in what, it is hoped, will eventually become the chief industry in the colony. As has been more than once pointed out, the economical leaders of British Guiana are hoping to see the successful substitution of gold mining for sugar growing and manufacture as their staple industry. It is, therefore, especially necessary that quartz mining, as distinguished from the profitable but necessarily temporary working of the alluvial deposits, should be developed on sound lines in the colony. So far, not everything that was hoped has been accomplished, but a great deal of steady work has been done—enough to prove that in some districts, at least, gold mining, if carried on with energy and method, will probably become more profitable than sugar has ever been. It must be borne in mind, moreover, that it is very easy to overstep the reasonable limits in expectation of what can be done in the early days of a new industry in a colony that necessarily has much to learn in the way of economical method. The political outlook is, it must be admitted, still enveloped in uncertainty. There is not, it is true, likely to be anything approaching a repetition of the recent war scare as between England and America, but when it is borne in mind how vitally important it is to British Guiana that the exaggerated claims of Venezuela should not be conceded in their entirety, there is, it will be admitted, enough remaining in the general aspect of this vexed question to occasion some anxiety. In this connection it is not a pleasant thing to read the utterance of Sir EDWARD CLARKE, and to know that so high a legal authority takes so pessimistic a view of English rights in the matter at issue. There is reason to remember, however, that Sir EDWARD's reputation is primarily legal, and that he can pretend to no special information or aptitude for dealing with questions affecting frontier delimitation. Under any circumstances it is well to know that the definite settlement of a difficulty that at one time threatened to force two kindred peoples into war cannot be much further delayed, and that when the political atmosphere has been cleared the development of the colony will go ahead, as the phrase is, by leaps and bounds.

STATE AID TO GOLD MINING.

A MOST peculiar leading article appears in the *Adelaide Observer*, in which the writer, by curious criticism and arguments, deprecates the aiding of the gold mining industry by the Government, and especially attacks the scheme for supplying the West Australian gold fields with water. In the first place, he resents State assistance of this description, because it imposes an additional tax upon the ratepayer, whereas a superficial acquaintance with political economy should teach him that the taxpayer is likely to gain more in an indirect way from this expenditure of money, than he is by keeping it in his pocket. For instance, the colony of Western Australia is likely to gain incalculable benefits from the prosperity of the gold mining industry, and stands to suffer most acutely from its ruin. The welfare of the colony depends directly upon the welfare of its mining industry, and only blindness would fail to see that it is the duty of each inhabitant, through the collective means of the Government, to do his little towards hastening and preserving its prosperity. Interest would be returned him, not in a direct, but in an indirect way, and that tenfold more than he would probably receive by expending so small a sum in other directions. The colony is sadly in need of water, the latter is essential to the well-being of the mining industry, likewise to health and existence, and hence it would be wisdom and foresight to expend a sum of money upon providing it. But our Australian contemporary stands aghast at the magnitude of the sum which will be required to carry out this scheme, and observes "that any serious miscalculation must mean black ruin for the whole colony." Where is the common sense of this extraordinary utterance? Are experts likely to make a miscalculation serious enough to ruin a colony so exceedingly rich in the precious metal, and with such a magnificent future before it? Supposing the whole of the money were lost—an eventuality most remote—how can it possibly mean black ruin—that is, we take it, irretrievable ruin—for the whole of the colony? It is absurd, too absurd for serious criticism, and hence we will dwell no longer upon it. But what is to be made of this statement?— "Even granting that the most sanguine estimates of future production are fully realised, what guarantee is there that the localities to which the pipes are to be led are exactly those in which they will be most needed? Everyone knows that the past history of gold mining has been full of the most extraordinary surprises in matters of this sort." What guarantee? Why the guarantee of common sense and reason. The propounders of the scheme are not going to undertake the work blindfold, and to go wherever their unguided footsteps may take them. They will naturally bring the water to those districts which are in greatest need of it, and not to places where there are no mines and only a few aborigines. So much for our contemporary's criticism. We never read arguments more feeble against State aid, and we do not think the article is likely to change the views of those who hold contrary opinions. We have ourselves always been strenuous advocates of State assistance, not only because we think it is the Government's duty to assist the industry all it can, but because it is a prudent and long-sighted policy. Besides, is it not a fact that those are the most prosperous countries which have received the greatest assistance from their Governments.

MINING TRANSFERS IN BRITISH COLUMBIA.

ALTHOUGH the mining industries of the Kootenay division of British Columbia have been steadily growing since the commencement of the present decade, it has only been within the last few months that investors in this country have paid any serious attention to the mines in that district, and up to the present the amount of English capital that has flowed into the Kootenay is by no means considerable. Our readers are aware that for the past two years we have kept them fully informed as to the increasing developments of the mining camps in that portion of the dominion, and from the first our opinion of its mineral resources was very favourable. The interest that has been taken in British Columbian mining affairs during the past summer clearly proves that we were right in our estimation. This interest has in no way declined during the holiday season, nor has there been the least diminution in active enterprise or energetic development in Trail Creek and the Slocan, but a very small cloud has appeared in the financial horizon, which those who have the best interests of that colony at heart are sorry to note. Now that outside capital has been attracted to that country, and syndicates have been formed in London to acquire mineral properties in Kootenay and other parts of the province, those who own mines, partially or wholly undeveloped, have in certain quarters shown a disposition to treat English investors as pigeons waiting to be plucked. It is of course, only natural that when treating with a company a greater sum would be demanded than when in negotiation with an individual investor, but to ask sums out of all proportion to the generally recognised local value of the property in question, merely because the would-be purchaser is understood to have English money behind him, is a policy at once both shortsighted and mischievous. Because there is plenty of money in England ready to be invested in any promising mining venture, it is very foolish to imagine that mere prospects in the Kootenay will entice sums of six figures from English pockets, and although it is willingly granted that some of the Red Mountain properties have proved their value by the regular payment of large and increasing dividends, every claim on Red Mountain will not develop into a War Eagle or a Le Roi, nor are English companies anxious to purchase such claims at an advanced figure on the remote chance that they may prove of equal value. There are not a few syndicates in this country which are willing to pay a price, and a good price, one far in advance of anything likely to be bid by a local speculator, for properties on which some mining expert is able to report favourably, and which, in sporting parlance, is likely

to show a run for their money. For producing mines England is well known to be the best market, but when negotiations are well under way the price commences to go up, increasing at intervals during several weeks, although when negotiations first commenced the price was understood to have been agreed upon. Not a few cases of this sort have occurred lately, and at this early date in the history of the Kootenay gold fields such a policy cannot be too loudly censured. English capital has been sought for years by those interested in the Trail Creek, Nelson, and Slocan Mines, but until sufficient development work had been done to show some reason for investing, no money was forthcoming, and now when the prospects of that far western colony are at their brightest, and some English capitalists have shown their willingness to enter this new field, certain shortsighted people in that district are in danger of driving them away, and thus hindering the rapid development of that country in which they are most interested. British Columbia has not a monopoly of any species of mineral, nor do its claims to our attention outweigh those of South Africa and other great mineral-producing countries, and should there be any light soreness among one or two of the Kootenay mineowners on account of the tardy arrival of the British investor, this is the worst time to let this feeling become known. No one who is acquainted with the march of events in Kootenay during the past five years will deny for a moment that the activity and enterprise shown by its inhabitants is worthy of the highest praise, and is almost entirely owing to their own efforts, and had the interest which London has recently shown towards them been vouchsafed a few years previously, even greater developments would, doubtless, have been achieved, but this is surely no reason for treating the English investor who has now commenced to arrive as an enemy rather than a friend.

MINING IN THE UNITED STATES.

Our readers will this week find our United States correspondent's letter extremely interesting from many points of view, and it will furnish them with a good half-hour's interesting and instructive reading. It is not often that we are enabled to give them a thrilling romance as a diversion to the otherwise solid and heavy matter which it is our duty to lay before them. This week, however, our correspondent has worked up the details of a story which, we believe, is quite unique in the history of gold mining. It has the additional recommendation of being, in the words of the third-rate novelist, "a story from real life," and with a little imagination to assist the writer, it could be made the foundation of a thrilling romance of the RIDER HAGGARD type. But, apart from this interesting story, the letter also contains much food for reflection, especially the paragraph under the heading "A Niagara in West Virginia," which deals with the all-important subject of power economy. We hope that our correspondent's observations will be carefully read and well weighed, for a great deal is to be gained from taking to heart the advice therein tendered. Here is an excellent opportunity for the wide-awake company promoter, to whom we suggest the advisability of forming a colossal company, which would not only have abundant promise of becoming a sound and profitable investment, but would do a vast deal of good to the industries of the United States. Another paragraph to which we would also draw his attention is the grand opening presented in America for the formation of companies for erecting and operating ore reducing and smelting works. The Americans, with their natural foresight and astuteness, have already come to the conviction that here is an opening for a highly profitable industry, and we would entreat English investors to step in before it is too late, and before all the plums have been taken and eaten by their more enterprising cousins.

AN EXEMPLARY ACTION.

We must again draw our readers' attention this week to the important article from our Victorian correspondent, who describes the steps taken by the Minister of Mines to uphold the honour of the colony, to defeat the aims of unscrupulous promoters, and to protect the investor. It has been conclusively proved now, upon abundant and trustworthy evidence, that the colony of Victoria is exceedingly rich in the precious metal, and that it abounds in mines, an investment in which would insure large and regular returns. But, unfortunately, there are in Victoria a number of worthless properties, which it is the intention of the promoters to float upon the London market. To express oneself in hyperbolic language, they are coming here in shoals, and as it would be exceedingly difficult for the investor to select the good from the bad, the Government of the colony, whose laudable ambition it is to thwart the designs of the promoters, has come to his rescue, the Minister of Mines having determined to dispatch to London Mr. JAMES STIRLING, the Assistant Government Geologist. What the duties of this gentleman will be our correspondent clearly points out, and investors, therefore, when in doubt and uncertainty can always approach this eminent expert for advice and guidance. We are gratified to learn of the influence *The Mining Journal* has had in its support of this action, and the no little excitement to which it has given rise amongst the company promoting fraternity. We cannot too highly commend this exemplary action of the Minister of Mines, and we earnestly hope that it will be followed by other Governments. Were this adopted generally it would be a grand thing for the mining industry, as well as for the particular gold fields themselves.

COAL MINING LABOUR.—Employment in the coal mining industry in September was slightly better than in 1895 at the same period of the year. At pits employing 380,663 persons an average of 4.89 days per week was worked in September, compared with five in August and 4.80 in September, 1895. The unemployed miners in trade unions in Northumberland and Durham amounted to 1.2 per cent. of the membership at the end of September, as compared with 1.3 per cent. at the end of August, and 2.3 per cent. at the end of September, 1895.

THE MINING MARKET.

FRIDAY EVENING.

Kaffirs unsettled, but above their lowest prices.—
West Australians flat.—Miscellaneous shares
neglected.—Coppers good.

THE Mining Market has not yet recovered from the state of nervous suspense in which we left it a week ago. The mid-October Settlement had then been completed without the announcement of any failures, although one day still remained in which announcements of default might be made. That day, which was Saturday last, passed off without a single declaration, but not until the most alarmist stories had been spread as to the failures that were impending. It is notorious that there was a great deal of helping over and bolstering up to avoid any open default. If this course of action was considered by the big men preferable it can hardly be said that the result was satisfactory, for the market has continued in an almost panicky condition, with dealings entirely professional, and the tongues of the scandal mongers more active than ever. It is said that large lines of stock were taken over by some of the outside African houses to avoid the breaking of the market, and that liquidations on this account have been in progress, and will continue for some time to come. Some of the weakness is traceable to Paris, and on Saturday it was noticeable that with the fall in Kaffirs there was a simultaneous break in Internationals. Paris continued flat up to the middle of the week, when there was a distinct rally attended by a sharp spurt in Spanish and Tintos, which give the cue to our market. To-day, however, French prices are off again. No useful purpose will be served by attempting to locate the weak spots in the Kaffir market. The bears have pursued their usual tactics of exaggeration, and since the Bank rate was raised to 4 per cent. on Thursday there is sure to be an attempt to put the screw on when Contango rates are fixed on Monday. The worst prices for Kaffirs were seen on Monday, since when a slight fractional hardening has been in progress, but the net effect of it all is so insignificant owing to the narrowness of the market, that a mere comparison of prices will serve all practical purposes in making up the record. The announcement of the contemplated new issue of Chartered which was made on Wednesday had at first a weakening effect, until the pros and cons of the position had been discussed at length, when the dealers changed their minds and began to put prices better. The exact terms of the issue have not yet been revealed, so that there is still a fruitful source of speculation as to whether the last impressions are right or wrong. It is not going too far to say that nobody knows anything definite about anything just now. It is all groping in the dark. An uneasy feeling is in the atmosphere, and everyone fears intuitively that some disaster is to come to the surface. There was just the same premonition of evil before the last Settlement, and nothing specific came of it. It is quite on the cards that no open result will ensue next week, but in the general interest it is almost to be hoped that the worst will be made known. It is out of vague uncertainties that panics are bred, and investors, at any rate, will be glad to know the worst to get the atmosphere clearer.

South Africans.

It seems probable that before long we shall see a revival of activity in Chartered shares, which lately have been entirely neglected. The accession of business is likely to arise out of the reported stipulation of the underwriters of the new issue that they are to have certain options over a further amount of capital not now to be dealt with. The figures generally accepted are that the company is to obtain powers to increase its capital by one million shares, making up the total to £3,500,000. Half of the new issue will be offered to existing shareholders in the proportion of one to five, whilst the other half will be covered by the options already mentioned. Chartered broke from 2½ to 2½ on Saturday, and again to 2½ on Monday, and at the latter figure they close, having fluctuated within ½ limits on either side. Gold Fields Deferred have received little actual benefit from their dividend declaration, and are finally ½ down at 10½. Gold Fields Deep were 8½ this morning, but they close unchanged at 8, and Gold Trusts are the turn easier at 6½. There have been some large transactions in East Rand, which dipped to 4½ on Monday, and changed hands just under 5½ to-day, closing ½ down on balance at 5½. Paris continues to supply the bulk of the business in these shares. Anglo-French are a shade easier at 3½, but the subsidiary companies are slightly harder. Comets at 1½, and Angelo at 3½. Land and Exploration shares generally do not exhibit extensive changes. Amongst those that are better are Rhodesia Exploring at 5½, Zambesia at 2½, New African at 2½, Mozambique at 1½, Hendersons at 2½, Exploring Land and Minerals at 1½, and African Estates at 1½, whilst Mashonaland Agency at 1½, and Oceana at 1½, are both ½ down. Messrs. Barnato are said to have been buying London and Paris Investment shares which have improved from ½ to 1½. This company is supposed to be specially interested in Buffelsdoorn, the shares of which are the turn harder at 2½. Other Barnato stocks are irregular, gains not exceeding ½ are seen in Glencairn at 2½, Kimberley Roodepoort at 2½, and Rietfontein at 2½, whilst equally unimportant losses appear in Barnato Consols and Ginsbergs both at 2, New Primroses at 4½, Johannesburg Investment at 2½, and Langlaagte Royal at 1½. The Robinson Stocks have been fairly well supported, small gains being shown in Block B. at 1½, and Randfontein at 2½, whilst Langlaagte at 4½, and Robinson Banks at 5½, maintain last week's quotation. Some wide fluctuations have occurred in Rand Mines, which were down to 23½ on Monday, and up to 25½ this morning, closing practically unchanged at 25. Goldenhuis Deep were 4½ yesterday, and Nourse Deep 4, but both of these stocks have recovered to-day, closing at 4½ and 4½ respectively. The usual gloomy forebodings as to the utter failure of Deep Level mining have been heard on all sides this week, but they have had little practical result. There has been some disposition to buy the better class gold shares, but the best prices have not been maintained. Henry Nourse have risen ½ to 6½, and Heriot ½ to 8½, whilst Ferreira at 18½, Modderfontein at 5, Nigel at 2½, Simmer and Jack at 5½, and Village Main Reef at 5½ are all on last week's mark. On the other hand losses of ½ are marked in Salisbury at 3½, and Jumpers at 5½, whilst City at 4½, Goldenhuis at 3½, and Wemmers at 8½, are all ½ down. Jubilees have been especially depressed, and after being offered at 7½, close ½ lower at 8. Knight's have been bought, and close ½ up at 5½, after being better. Crown Reef at 10½, Durban at 6½, Meyer and Charlton at 5½, Kleinfountain at 2½, Bantjes at 2½, Sheba at 1½, Van Ryn at 4½, Wolhuter 5½, Worcester at 4½, and Steyne Estate at 1½, all maintain last week's prices. Transvaal Gold has risen ½ to 6½, and Robinson ½ to 8½. The small Lydenburg shares have sagged away to the extent of a few pence, but changes are not sufficiently important to require detailed notice. Diamond shares have attracted a good deal of

attention, chiefly on Paris account. They had a sharp spurt on Thursday, particularly De Beers, which this morning changed hands at 28½. They have eased off to-day, closing ½ higher on balance at 28½. Jagers have been 9½, leaving off ½ up at 9½.

West Australians.

There is a very uneasy feeling in this section, and prices have been given way in all directions. The direct cause appears to be the financial embarrassments of individuals who have been regarded as leading supporters of the market. It is not unreasonable to conclude that some of these financiers have had too many irons in the fire. At the same time it is more than probable that three-fourths of the stories flying around jobbers have marked prices down. The settlement may prove that these precautionary measures were justified, or it may prove the exact reverse. In the meantime, all we can say is that quotations are merely nominal in the majority of cases, and that the market has a very unhealthy look. Even the Associated group, which appear to have a more solid backing than several other sections of the market, has developed a disquieting weakness within the last day or two. Associated left off on Thursday night at 2½, and sellers, but broke right away to 2½ to-day, and are not much better at the close. Associated Southern are ½ down at 1½, and Lake View South ½ easier at 1½. Joint Stock Trust have given way to the extent of ½ at 2½ premium. Lake View Consolidated have declined ½ to 6½. Hannan's Brownhill have fluctuated somewhat freely, closing ½ down at 3½. Great Boulders were 6½ this morning, but close ½ down at 6½. North Boulders have lost ½ at 1½, Orya ½ at 1½, Hannan's Reward ½ at 1½, Hannan's Star ½ at 1½, Lady Loch ½ at 1½, Crosses South United ½ at 1½, Iron King ½ at 1½, and Central Boulder ½ at 1½. Golden Horseshoes are almost the only share to show a gain on the week. They had a run up on Wednesday to 1½, and although they have failed to hold their improvement, are finally ½ up at 1½. The Menzies group is generally lower, Florence, Menzies, Reef, O'Driscoll, Menzies Mining, Crusoe and Menzies Consols all being reduced to a nominal equality somewhere between ½ and 1. Lady Shentons are ½ lower at 1½. White Feathers have lost just the turn of the market at 1½. Hit or Miss managed to recover to 1½ on Wednesday, but has fallen again to-day, closing ½ down at 1½, whilst Wealth of Nations has lost the same fraction at ½. Ramapo Syndicate has shed ½ at 2½, and Black Flags are ½ down at 1½. The issue of a satisfactory circular by the Hampton Plains company has not saved the shares from a decline of ½ at 3½. Mainland Consols have lost ½ at 2½ and West Australian Gold Fields ½ at 6½. Decided hardness has been noticeable in the shares of London and Globe Finance and the Exploring and Finance, both of which companies will benefit largely by the distribution of Lake View Consolidated. Although no actual gain is shown, the shares are very firm at 4½. Colonial Finance is marked down ½ to 2½, the Founders' shares losing five points, at 50. Share Corporations are ½ easier at ½, and losses of ½ appear in W.A. Concessions at ½, and Developments at ½. A complete collapse has occurred in W.A. (Gold District) Trading, which have lately been the medium of an impudent rig. The ordinary shares are offered at ½, and the Founders at 1½, against 35 last week, and 100, or thereabouts, during September.

Miscellaneous.

Indian gold shares have not been able to withstand the prevailing depression, and show losses all along the line, though not very serious ones. Mysore have fallen ½ to 6½, Champion Reefs ½ to 7½, Coromandel ½ to 2½, Nundydroog ½ to 3½, Oregum ½ to 2½, and the Preference ½ to 3½. Mysore Wynad have been put up 2s. to 13s. 6d. The New Zealand group is generally easier, except in the case of Goldfields, which come out ½ better at 3½. Taitapu were offered down to 2½ in the early part of the week on the liquidation of a large parcel of shares. They close ½ down at 2½, whilst Waihi have fallen ½ to 6½, Silverton ½ to 1½, and Kapanga 1s. 9d. to 10s. 9d. Changes in Charters Towers shares are generally adverse. New Queens have lost 1s. 6d. at 6s. 9d., Mills Day Dawn ½ at 1½, Brilliant Block ½ at 1½, and Day Dawn Blocks 6d. at 11s. Hyderabad Decans are ½ easier at 3½, the directors report not having had the stimulating effect anticipated. Westwore have unchanged at ½, and Aladdins are the turn easier at 2½. Mount Lyella have shed ½ at 7½, Broken Hills at 2½, and British at ½, are each ½ lower. Burma Ralys have declined ½ to 1½, Alaska Mexican has lost ½ at 1½. The market in Copper shares has been very active chiefly owing to Paris orders. Tintos close slightly below the best at 24½, which is ½ better than last week's price, whilst Anaconda has put on ½ at 6½. Cape Coppers at 2½, Copiapo at 2½, Mason and Barry at 3, and Tharnis at 5½, all practically unchanged.

STOCK EXCHANGE SETTLING DAYS.

Consols.	
Thursday, November 5.	
MINING MAKING-UP DAYS:	
Monday, October 26.	Monday, November 9.
MINING NAME DAYS:	
Tuesday, October 27.	Tuesday, November 10.
ACCOUNT DAYS:	
Thursday, October 29.	Thursday, November 12.

REVIEW.

Report Book for Mining Engineers. By A. G. Charlton, M.E. (London: Whitehead, Morris, and Co., Limited, printers, 9, Fenchurch Street, E.C.)

Many-sided and ingenious as are the modern developments of literary production, one of the best of them is undoubtedly the admirable series of engineering pocket-books which from time to time make their elegant appearance in leather, cloth, and gilt from the Press, London and other. Mr. A. G. Charlton, the well-known mining engineer, has added another to the number of these useful publications by the compilation of a tasteful little volume designed to be a companion—and we are sure a welcome companion—to the mining engineer. The book might easily have made its appearance under another title—that, namely, of "Reporting on Mines made easy," since its major part is occupied with a skeleton report upon a supposititious property, going fully into all the minutiae of claims, reefs, strata, locality, and means of communication, and it must be admitted that in the case of a faithful fulfilment of the conditions set out here in full a mining engineer's report would certainly have the recommendation of completeness. Nothing that could possibly make the book more useful appears to have been neglected. From end to end it has been interleaved with blank sheets of paper upon which the expert can enter any details it is essential to remember. By its style, arrangement, and general get up, the book recommends itself to favourable attention, and there is reason to expect that it will become a prime favourite among mining engineers.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

ARMADALE.—Cablegram received from consulting engineer, Mr. Frank Nicolas:—"Armada machinery, good progress is being made."

ANGLO-MEXICAN.—The following is the total output for the month of September:—"£31,900 bullion, \$1500 concen- trated, 1672 tons worked, 26 days' run."

ACHILLES GOLD FIELDS.—The September gold crushing has been cabled by the managing director at the mines as follows:—"Crushed 500 tons, obtained 122 ounces of gold. October crushing, you may expect, will yield a good return; November decidedly better."

BAKER'S CREEK.—Result of crushing to October 19 400 ounces retorted gold.

BAILEY'S REWARD No. 1 SOUTH.—The following cable, dated the 16th inst., has been received by the company's London office from its head office at Melbourne:—"98 ounces, 45 tons."

BENDIGO GOLD FIELDS.—The manager at Bendigo (Mr. L. A. Samuels) cables that the lode has been cut in the South Bendigo Mine.

BLAGROVES FREEHOLD.—The directors have received the following telegram from the manager, viz.:—"Timbering will resume sinking next week. The crosscut has been driven 14 feet. There is a great improvement in the country rock. Developments in the mine are most encouraging."

BONNIE DUNDEE.—Cablegram from Charters Towers:—"Have crushed 340 tons of quartz from the Victory reef for a yield of 253 ounces of gold." The approximate value of this return is £875.

BROWNHILL GREAT SOUTHERN.—The following telegram has been received:—"Visible free gold struck 75 feet level north-east. The width of the lode is 14 feet."

BASS AND FLINDERS.—The secretary has received the following cable from the manager, dated Coolgardie, 16th inst.:—"The result of the trial crushing of 10 tons, including tailings, gives a return of 8 ounces 11 dwts. of gold per ton. Will put through the remaining 15 tons (to complete the 25 tons) as soon as possible. Cardiff Castle battery is not available for the present. There is a steady improvement in the value of the ore in the lower workings. Large amount of rich ore in sight."

CONSOLIDATED MURCHISON.—Cablegram states:—"Day Dawn Mine crushed 252 tons, obtained 112 ounces of gold. Day Dawn West crushed 257 tons, obtained 64 ounces of gold."

CRESCENT.—Cablegram, dated October 21, from Mr. T. G. Dury, giving result of the crushing for the past month:—"Consent, 500 tons, 67 ounces."

CONSOLIDATED GOLD MINES OF WESTERN AUSTRALIA.—The following cablegram has been received from the company's manager at Marble Bar:—"Have cleaned up after crushing 214 tons of quartz. Gross yield, 141 ounces. This return is below the average. Ore in sight averages about 18 dwts. per ton. Have a good supply in hand of ore of fair grade."

CHRISTMAS REEF (RHODESIA) DEVELOPMENT.—The following cable has been received from Mr. Hoffman, the company's manager at Bulawayo:—"I have personally inspected the company's property and consider it good. Pegs and beacons are all right. Have commenced work by repairing shaft, after which shall proceed energetically with underground develop- ment." The directors gather from the foregoing cable that the district in which the mine is situated—viz., 12 miles south-east of Bulawayo, close to the Tuli-road—is sufficiently pacified to enable mining operations to be carried on.

GRAVEL.—The following cablegram has been received from the superintendent relating to run No. 17:—"We have cleaned up the head of sluice only after a run of 63 days, during which time we have washed 1150 hours. The gross returns are £480. We have been very short of water during this run."

DAY DAWN BLOCK AND WYNDHAM.—This company has just received the following cablegram from the general manager at Charters Towers, giving the result of the crushing for the fortnight ending the 17th inst.:—"Tons crushed, 1090; yield of gold, 990 ounces; approximate value £3280; fortnight's expenses £1920."

DOLLAR.—We have fairly started at last with erection of machinery; we shall restart sinking below 137 feet level at earliest possible moment. A large amount of work is being done in adjoining properties, both north and south, on same line of reef.

EAST MURCHISON UNITED.—A cablegram received states:—"Crushed 402 tons, obtained 603 ounces of gold."

GOLDEN ARROW.—Superintendent cables on the 17th inst.:—"From the 320 feet level the ore assays more than 12 ounces per ton."

HERBERT GOLD.—The managing director reports:—"Main shaft now down 159 feet. All complete and timbered to this depth. At the 60 feet level we are driving east and west, whilst developments promise splendidly."

HANNA'S GOLDEN PEBBLES.—The following cablegram has been received from Mr. George Gray:—"Steam hoisting and pumping plant ready, and I expect will enable works to proceed next week, and development will be pushed on; mill machinery slowly arriving."

HANNA'S STAR.—A cablegram has been received from Coolgardie, dated October 20, as under:—"New (main) shaft carrying Boulder reef from the surface showing free gold at a depth of 20 feet. Level north (crosscut from James's shaft) drives 10 feet, looking well. Have secured site for mill."

IMPERIAL WESTERN AUSTRALIAN CORPORATION.—Western Shaw. With reference to first crushing announced a few days ago, the corporation is further advised that only first stamps have been working, and that the well is being sunk to increase water supply sufficient for the 10 stamps. Enough ore has been raised (of same excellent quality) to keep the whole 10 stamps employed two months. The reserves of ore are very large, and the manager is confident of success.

IVANHOE (No Liability).—The London office has received advice by cable that the annual meeting of shareholders will be held at Melbourne on October 30.

KAPANGA.—The directors have received the following telegram from the manager, viz.:—"The crosscuts at the 1000 feet level have been advanced 10 feet to the west, and 8 feet to the south-east. We have intersected the reef; looking well. Judging from the appearance of the reef at the 940 I think the result will be satisfactory."

LUCKY GUSS (Cripple Creek).—Cable received October 20 from mine manager:—"Crosscut has cut the lode 100 feet deep from the main shaft. Length of crosscut 100 feet. The first tests made average \$24.25 (per ton of 2000 lbs.) Looking first rate."

LONDON AND NEW ZEALAND EXPLORATION.—The company's agents in New Zealand report by cable that another reef has been discovered on the White Star Consolidated prop- erty, 6 feet in width, the highest assay value of the ore being £14 per ton.

MAY CONSOLIDATED.—The following cable message, dated Johannesburg, 16th instant, has been received at the office:—"The profit for September was £5036."

MENZIES GOLD REEFS PROPRIETARY.—Cable infor- mation has been received from the manager at the mines to the following effect:—"Friday underlay shaft. Level No. 3 south shows great improvement. Reef is only small at present, 6 inches, showing very good gold. There is no change to report other- wise."

MOODIES.—Last month's return: Claims rented 545, tons crushed 980, ounces of gold obtained 550.

MURCHISON UNITED.—A cablegram has been received from the mines superintendent, dated Cus, October 22, stating that a further 20 tons of ore have been crushed, which yielded 41 ounces gold.

MOUNT GREENOCK (Victoria).—No. 4 bore has bottomed 76 feet from surface, showing the wash dirt to be 3 feet thick. The core of bore shows fine gold.

MOUNT HEPBURN.—The following cable has been received from Mr. Spain:—"Week's assays average 3 ounces 15 dwts. per ton." In a letter received by Mr. Spain from the new mine manager, he comments favourably on the merits of the property, and reports the magnificent development in the north stopes, the ore body being referred to as enormous and of uniform worth, and that there was nothing troublesome in regard to its treatment.

MOUNT MAGNET.—The following cablegram has been received from the general manager, dated October 23:—"Main shaft 132 feet deep, 3000 gallons of water per 24 hours. Devel- opments, level No. 1, excellent, good progress is being made in all departments."

MOSMAN.—Cablegram from Charters Towers:—"Have driven the No. 16 level (Wyndham shaft) to the south, and have struck a reef 5 feet thick, showing fair gold."

NEW CHUM.—Cable to hand from Mr. L. A. Samuels, the manager:—"Since last report the winze from No. 7 level, 110 feet east of main shaft, has been sunk 30 feet; total depth of winze, 80 feet. There is a fair amount of quartz in the bottom of winze, so shall continue. The reef in No. 6 level continues to show improvement. Have started opening up No. 3 level."

NEW QUEEN GOLD.—Cablegram, dated Charters Towers, October 16:—"New reef 12 tons; one-third mullock 6 ounces."

NEW OPTIONS.—Cablegram, dated October 21, from the mine:—"Monarch. Have struck a pocket of very rich ore. Main shaft, at a depth of 100 feet, very similar to previous seam."

NORTH RANDFONTEIN.—The London agents (Robinson South African Banking Company, Limited) are informed that the North Randfontein Gold Mining Company (Limited) com- menced crushing on October 15.

NORTH BOULDER.—In a cable received from the mine manager reporting the second crushing, he states that in 152 hours' working 190 ounces of gold were recovered from 95 tons of quartz.

NUOVA ESPERANZA.—The following is a copy of a cable- gram just received from the mine superintendent, viz.:—"Have cleaned up \$2500. Water for 390 hours only. Profit on the run, \$200 (gold)."

OURO PRETO.—Cablegram giving the September returns:—"Passagem Mine, 4132 tons produced 1503 ounces. Raposos Mine, 50 tons produced 11 ounces."

PICK-O-THE-FIELD.—Cable information to hand from the manager:—"Erection of machinery now about completed. Will be running in the next few days."

RIPANJI QUICKSILVER AND SILVER.—The following telegram has been received from the mines:—"Cut ore body in 49 metre level."

SIMMER AND JACK PROPRIETARY.—The following cable has been received:—"The profit for the month is £10,002."

ST. JOHN DEL REY.—The following telegram was received from Mr. Chalmers on October 17:—"Produce 11 days, first division October, 12,750 ounces, equal to 1469 ounces troy, value £940; yield per ton, 5.8 ounces (68 ounces troy)."

SOUTHERN NEW CHUM.—The following cable is to hand from the manager:—"Since my last report main shaft has been sunk 16 feet, total from plat 247 feet, and from surface 407 feet. The Lawrence reef in No. 1 level north is small, but is well defined, and shows free gold. Am continuing drive north for stoping purposes. Have commenced adit level into hill on the new south level."

SPITZKOP FARM.—The following cable has been received from the mine:—"Assays improving, slime plant completed, labour more plentiful."

SOUTH BENDIGO.—The directors are in receipt of the following cable information:—"Since last report the main shaft has been sunk 16 feet, total from plat 286 feet, and from sur- face 1056. Have cut the reef in shaft, and at the end of this fortnight, October 31, shall cease sinking and open out on the lode."

WAIHI GRAND JUNCTION.—The manager cables Oct. 17:—"Grand Junction engine shaft is down 492 feet. Waihi West prospecting shaft, south drive, 432 feet. Driven in lode 16 feet, poor quality. Continuing the drive for Welcome lode."

WEMMER GOLD.—The profit on work done during Sep- tember is advised by cable as £5804.

WEALTH OF NATIONS.—Mine manager reports by cable as follows:—"The ore bodies in sight opened up by the developments will last for 15 years, also there are 7000 tons of ore on the dump. Good progress is being made with the erec- tion of machinery, and the construction of dam for reservoir."

WESTERN AUSTRALIAN DEVELOPMENT CORPORA- TION.—The following cablegram has been received from Mr. Frank Nicolas, the company's engineer:—"Dorothy reef proved to a depth of 140 feet."

WEST AUSTRALIAN DEVELOPMENT CORPORATION.—The following cablegram has been received from Mr. Frank Nicolas, the company's consulting engineer:—"Orotava. At a depth of 50 feet a formation very similar to Armadale, 18 dwts. per ton."

WOLHUTER.—Profit for September £6755, against £5248 for August.

WOODSTOCK.—Cablegram received from mine manager, dated October 19:—"New leading stopes in back of main reef Maria No. 3 level, average assay £12 per ton."

WAIHI SILVERTON EXTENDED.—The following cable has been received from local board:—"Crushed 760 tons, esti- mated value £800."

WAIHI GOLD.—Bullion return for 23 days ending Octo- ber 17, £12,500, from 3100 tons.

The **EAGLE'S NEST GOLD MINING COMPANY (LIMITED)** has made a further call of 2s. 6d. per share on shares of the company number 1 to 30,000 (which are now 10s. paid up), payable on November 10, at the Union Bank of London (Limited), 2, Princes-street, E.C.

The offices of the **Londonderry Gold Mine (Limited)** have been removed from 3, Gracechurch Street, to 1, Great Win- chester Street.

THE METAL MARKETS.

THE METAL MARKET, LONDON, OCTOBER 23.

Copper

HAS benefited by the improvement in the American financial outlook, both G.M.B.'s and refined copper having been actively dealt in during the current week. The G.M.B. market opened with sales at rather easier prices, s.c. G.M.B.'s being treated at £46 17s. 6d., and three months at £47 7s. 6d. An improve- ment of 2s. 6d. was followed by a relapse to £46 16s. 3d. s.c., but from this figure, which was reached on Tuesday morning, values rose briskly under the influence of a better speculative feeling, which found expression in increased buying. Spot touched £47, and three months £47 11s. 3d. on Tuesday, £47 12s. 6d. and £48 2s. 6d. respectively on Wednesday, £47 13s. 9d. and £48 5s. respectively on Thursday. To-day's market was again strong, with an advance to £48 11s. 3d. three months and £48 a week, or a total rise during the week of over a sovereign. The close is firm at £47 13s. 9d. to £48 s.c., and £48 8s. 9d. to £48 10s. three months. In America, Lake has advanced to 10½ cents.

Tin

The strong upward movement of last week reached its climax on Monday morning, when £58 7s. 6d. was paid for cash Straits and £59 for three months, but the weaker silver market induced a certain amount of speculative selling, which resulted in a decline to £57 8s. 9d. s.c. this point being reached on Wednesday. At this point a renewal of speculative interest was shown, and values recovered quickly, £58 3s. 9d. s.c. and £58 17s. 6d. three months being paid on Thursday, the turn-over varying from 200 to 450 tons per day. To-day's market was again firm, with business in s.c. at up to £58 8s. 9d. and three months at up to £59 5s., the two positions closing at £58 5s. to £58 7s. 6d. and £59 2s. 6d. to £59 5s. respectively.

Pig Iron

Glasgow opened at 47s. 3d. s.c., and a moderate business took place at that price, and 47s. 2d. on Monday. On Tuesday the tone was strong with transactions up to 47s. 7d. s.c., and on Wednesday 48s. was paid. Thursday's market was irregular, beginning at 47s. 10½d., touching 47s. 7d., and then rallying to 47s. 9½d., and to-day, after business at up to 48s. 5½d., the market closed at 48s. 5d. buyers s.c., and 48s. 8d. a month, with hematite at 49s. 9d., and Middlesbrough at 40s. 0½d. Scotch shipments last week amounted to 3000 tons—equal to a falling-off of over 2000 tons compared with the same period of last year.

Lead

Has been steady and uneventful. It closes rather firmer in tone at £11 to £11 2s. 6d. soft foreign, and £11 5s. to £11 7s. 6d. English.

Spelter

Is quiet but steady, with not much either enquired for or offered. The closing values are £16 10s. to £16 12s. 6d. ordinaries, and £16 17s. 6d. specials.

Antimony

Is quiet and unchanged at £29 to £29 10s.

Quicksilver

Remains without alteration at £612s. 6d. firsts, and £5 12s. seconds.

The following are to-night's (October 23) prices of metals:—

	Copper	£	s.	d.	£	s.	d.
Tough cake and ingot	...	50	5	0	50	5	0
Best selected...	...	50	10	0	51	10	0
Electrolytic Copper	...	51	2	6	53	0	0
Sheets and sheathing	57	10	0
Flat bottoms...	60	10	0
Good merchantable, 1 spot, 2 3 months respectively	...	43	0	0	48	10	0
Copper tubes, seamless	0	0	0
Alloys							
BRASS: Wire	0	0	0
" Tubes (solid drawn)	0	0	0
" Sheets	0	0	0
PHOSPHOR BRONZE: Alloys II...
" " III. or	81	0	0
" " VII.	83	0	0
" " XI.	72	0	0
" " Vulcan brand AI	73	0	0
DURO METAL	75	0	0
BULL'S METAL	65	0	0
Ferrobronze (Vivian's)							
Ingots...	...	0	0	0	...	...	...
Ordinary sheets, plates, bolts and bars	...	0	0	0	...	...	...
Screw bolts and nuts	...	0	0	0	...	...	...
Pump rods, plain	...	0	0	0	...	...	...
" Flashed	...	0	0	10½	...	...	...
DELTA METAL: No. 4 (per ton)
" Sheets and plates (per lb.)
" Bars, round, square, flat (per lb.)
" " hexagon (per lb.)	78	0	0
Tin							
English, ingots, f.o.b.	62	5	0
" bars	63	5	0
" refined	64	5	0
Straits, spot, and three months respectively	...	58	7	6	59	5	0
Australian, spot, and three months respectively	...	60	2	6	61	0	0
Banco (in Holland)	...	59	10	0	59	12	0
THE PLATES: Charcoal, best quality	...	0	14	0	0	13	6
" ordinary	...	0	11	0	0	10	0
" Coke, best quality	...	0	10	3	0	9	0
" ordinary	0	9	0
These prices of tinplates are f.o.b. at Swansea; at Liverpool 6d. per ton more.							
Iron							
Pig, G.M.B., f.o.b. Clyde, spot	2	8	6
" Scotch pig, No. 1 Gartsherrie	2	10	0
" " Coltness	2	12	0
" " Clyde	2	9	0
" " Govan	2	8	6
Bars, Welsh, f.o.b. Wales...	5	7	6
Plates	5	7	6
Bars, Staffordshire, at works	5	7	6
Plates	5	12	6
Hoops	5	17	6
Ship plates, Middlesbrough	5	8	6
STEEL: English spring	12	10	0
" cast	42	0	0
" Rails at works, according to section	...	4	5	0	5	15	0
Lead							
Spanish or soft foreign	...	11	0	0	11	2	6
English pig, common	...	11	5	0	11	15	0
" L.B.	12	5	0
" sheet and bar lead	12	15	0
" red	14	0	0
" white	17	0	0
" patent shot	14	15	0
Spelter							
Silesian ordinary brands	...	16	10	0	16	12	6
" special brands	...	16	15	0	16	17	6
English Swansea	...	17	5	0	17	7	6
Sheet Zinc	...	19	8	0	19	10	0
Antimony							
Antimony	...	29	0	0	29	10	0
Quicksilver							
Wicks, 75 lbs. warrants	...	6	12	0	6	12	6
Ore, c.l.f., U.K. ports
1st quality, 50 per cent. and upwards	...	0	0	11	0	1	1
2nd " 47 per cent. to 50 per cent.	...	0	0	10	0	1	0
3rd " 40 " 47 per cent.	...	0	0	9	0	0	11
Aluminium							
98-99½ per cent.	...	0	1	4½	0	1	8
Nickel							
98-99 per cent. guaranteed	...	0	1	2	0	1	4

The secretary of the **ISLE OF MAN MINING COMPANY (LIMITED)** has sold 100 tons of this company's ore at £8 4s. per ton, also 100 tons at £9 13s. 3d. per ton on Monday last.

Warrants for interim dividend No. 1, payable to ordinary shareholders of the **LONDON AND NEW ZEALAND EXPLORATION COMPANY (LIMITED)** have been posted.

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—A, Antimony; Ar, Arsenic; B, Blende; Bx, Borax; C, Copper; D, Diamond; G, Gold; I, Iron; L, Lead; M, Manganese; N, Nitrate; P, Phosphate; Q, Quicksilver; R, Ruby; S, Silver; S-L, Silver-lead; Sph, Sulphur; T, Tin; and Z, Zinc. * In the "Amount of Share" column of British Mines signifies that the mine is conducted on "Cost Book" principles; 1 in the "Head Office" column of African Mines signifies that the address given is not that of the head office but of a sub, or transfer office; and †, following the names of African Mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

* The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share Dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that while our Share List will almost invariably be found correct, we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.

AFRICAN MINES.

Name.	Closing Price, Oct. 23, 1896.	Closing Price, Oct. 16, 1896.	Am't. of Share	When last X'd and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
Abbott's Con. Reefs	1 1/2	1 1/2	1	—	—	—	De Kaap	Broad Street Avenue
Adler Consolidated	1 1/2	1 1/2	1	—	—	—	Transvaal	1, Moorgate place.
African Estates	1 1/2	1 1/2	1	—	—	—	De Kaap	3, Copthall-buildings
" Gold Revy.	2 1/2	2 1/2	1	—	—	—	—	23, College Hill.
Afrikaner	1 1/2	1 1/2	1	—	—	—	Transvaal	23, College Hill
Alexandra Estate G	1 1/2	1 1/2	1	—	—	—	Hand	15, George street
Angelo	1 1/2	1 1/2	1	—	—	—	Hand	Winchester House
Anglo-French Exp.	1 1/2	1 1/2	1	—	—	—	S. Africa	3, Prince street
" Matabeleland	1 1/2	1 1/2	1	—	—	—	Matabele	Winchester House.
Appantoo	1 1/2	1 1/2	1	—	—	—	West Coast	Dashwood House.
Aurora	1 1/2	1 1/2	1	—	—	—	Hand	8, Old Jewry.
" West United.	1 1/2	1 1/2	1	—	—	—	Hand	7, Lothbury
Balks Kersting G	1 1/2	1 1/2	1	—	—	—	Transvaal	55, Gracechurch-st.
" Land	1 1/2	1 1/2	1	—	—	—	—	15, Geo. St. Mn Ho.
Bantjes Consoi G	1 1/2	1 1/2	1	—	—	—	—	—
Barnato Consoi	1 1/2	1 1/2	1	—	—	—	De Kaap	7, Lothbury.
Barn 11	1 1/2	1 1/2	1	—	—	—	Turffontein	17, Basinghall-street
Bechuanaland Exp.	1 1/2	1 1/2	1	—	—	—	De Kaap	19, St. Swithin's-lane
" Trad Assoc.	1 1/2	1 1/2	1	—	—	—	Bechuana.	75, Basinghall street
Big Golden Quarry	1 1/2	1 1/2	1	—	—	—	Kaap Mivv	Warnford Court.
Blok "B" Lang.	1 1/2	1 1/2	1	—	—	—	Hand	8, Prince-st. E.C.I.
Bonanza	1 1/2	1 1/2	1	—	—	—	Hand	15, St. Swithin's-lane
Brit. S. A. Char.	1 1/2	1 1/2	1	—	—	—	S. Africa	7, Lothbury.
Buffelsdoorn G	1 1/2	1 1/2	1	—	—	—	Potchefst.	5, Old Jewry
" Central	1 1/2	1 1/2	1	—	—	—	Hand-Rhodesia	Warnford Court
" Consolidated	1 1/2	1 1/2	1	—	—	—	—	—
Cape Asbestos	1 1/2	1 1/2	1	—	—	—	Orange Rv	19, St. Swithin's-lane
" Copper	1 1/2	1 1/2	1	—	—	—	Orange Col.	9, Queen-street-place.
" S. Pref.	1 1/2	1 1/2	1	—	—	—	—	—
Cassell Con.	1 1/2	1 1/2	1	—	—	—	Johannb.	3, Cannon-street.
Cent. de Kaap	1 1/2	1 1/2	1	—	—	—	De Kaap	Palmerston Bldgs
" Roodt Deep	1 1/2	1 1/2	1	—	—	—	—	120, Bishopsgate-st.
Champ d'Or	1 1/2	1 1/2	1	—	—	—	Hand	8, Old Jewry, E.C.
Charterland G.F.	1 1/2	1 1/2	1	—	—	—	Hand	19, St. Swithin's-lane
Chimes West	1 1/2	1 1/2	1	—	—	—	Hand	Winchester Ho.
City and Sub. R.W.G.	1 1/2	1 1/2	1	—	—	—	Hand	Gresham Ho.
Con. Buifontein	1 1/2	1 1/2	1	—	—	—	Griguland	62, Lombard-st.
Con. Deep Levels G	1 1/2	1 1/2	1	—	—	—	Transvaal	30, St. Swithin's-lane
Con. G. Fields S.A.	1 1/2	1 1/2	1	—	—	—	S. Africa	8, Old Jewry.
Do. S. Pref.	1 1/2	1 1/2	1	—	—	—	—	—
Do. S. Deben.	1 1/2	1 1/2	1	—	—	—	—	—
Crown Deep	1 1/2	1 1/2	1	—	—	—	Hand	120, Bishopsgate-st.
" Neel	1 1/2	1 1/2	1	—	—	—	—	—
De Beers Consoi. D	28 1/2	27 1/2	1	—	—	—	Kimberly	62, Lombard-street.
Do. S. 1st Deb.	100 102	100 102	1	—	—	—	—	—
Do. S. 2nd Deb.	100 102	100 102	1	—	—	—	—	—
Do. S. 3rd Deb.	100 102	100 102	1	—	—	—	—	—
Doornkop	1 1/2	1 1/2	1	—	—	—	Doornkop	Warnford Court
Driefontein	1 1/2	1 1/2	1	—	—	—	Hand	Winchester Ho.
Durban Roodt G.	1 1/2	1 1/2	1	—	—	—	Hand	28, Leadenhall-bldgs
" Deep	1 1/2	1 1/2	1	—	—	—	—	—
Eastleigh	1 1/2	1 1/2	1	—	—	—	Klerksdrp	52, Leadenhall Street
East Orion	1 1/2	1 1/2	1	—	—	—	Hand	8, Old Jewry.
" Rand.	1 1/2	1 1/2	1	—	—	—	Hand	170, Winchester-ho.
Exploration	1 1/2	1 1/2	1	—	—	—	S. Africa	30, St. Swithin's-lane
Exploring L & M.	1 1/2	1 1/2	1	—	—	—	—	—
Ferreira	1 1/2	1 1/2	1	—	—	—	Hand	120, Bishopsgate-st. Wn
French Rand	1 1/2	1 1/2	1	—	—	—	Hand	28, Austin Friars.
Geidenhuis Deep G	1 1/2	1 1/2	1	—	—	—	Transvaal	30, St. Swithin's-lane
" Est. G	1 1/2	1 1/2	1	—	—	—	Hand	120, Bishopsgate-st. Wn
" Main Reef	1 1/2	1 1/2	1	—	—	—	Hand	Warnford Court, E.C.
George Goch	1 1/2	1 1/2	1	—	—	—	Hand	Johannesburg.
Glenberg New G	1 1/2	1 1/2	1	—	—	—	Driefont.	Warnford Court, E.C.
Glencairn	1 1/2	1 1/2	1	—	—	—	Hand	2, Drapers-gardens.
Golden Dove	1 1/2	1 1/2	1	—	—	—	Natal	65, Chancery Lane.
Gld. Fls. Deep G	1 1/2	1 1/2	1	—	—	—	S. Africa	8, Old Jewry.
G.F. of Lydenb'g	1 1/2	1 1/2	1	—	—	—	Lydenb'g	7, Lothbury.
G.F. of Mashonid.	1 1/2	1 1/2	1	—	—	—	Mashonid.	19, St. Swithin's-lane
Grasop	1 1/2	1 1/2	1	—	—	—	Lydenburg	2, Tokenhouse Bldgs
Gt. Estru. G	1 1/2	1 1/2	1	—	—	—	Grottoel	Gresham House
Griguland W.	1 1/2	1 1/2	1	—	—	—	Transvaal	62, Lombard-street
Heidelberg. Est. Ex.	1 1/2	1 1/2	1	—	—	—	Heidelberg.	—
Henderson's Trans	1 1/2	1 1/2	1	—	—	—	Zoutpansg	85, Gracechurch-st.
Henry Nourse G	1 1/2	1 1/2	1	—	—	—	De Kaap	Warnford-court.
Hetty	1 1/2	1 1/2	1	—	—	—	Middlevel.	55, Bishopsgate-st Wn
Joe's Reef	1 1/2	1 1/2	1	—	—	—	—	21, Mining Lane.
Johannesburg Invest	1 1/2	1 1/2	1	—	—	—	—	7, Lothbury.
" Pioneer	1 1/2	1 1/2	1	—	—	—	Hand	Johannesburg.
Jubilee	1 1/2	1 1/2	1	—	—	—	—	8, Old Jewry.
Jumpers	1 1/2	1 1/2	1	—	—	—	—	120, Bishopsgate-st. Wn
" Deep	1 1/2	1 1/2	1	—	—	—	—	30, St. Swithin's lane
Kimberley	1 1/2	1 1/2	1	—	—	—	Kimberley	19, Finsbury circus
" Bep.	1 1/2	1 1/2	1	—	—	—	—	2, Drapers-gardens.
Kleinfontein in Cen.	1 1/2	1 1/2	1	—	—	—	E. Rand	Winchester House
Klerksdrp	1 1/2	1 1/2	1	—	—	—	Klerksdrp	110, Cannon St.
Knights' Deep	1 1/2	1 1/2	1	—	—	—	—	8, Old Jewry
Kofffontein	1 1/2	1 1/2	1	—	—	—	Jacobsdal	6, St. Helen's.
Lancaster	1 1/2	1 1/2	1	—	—	—	Lulp. Vlei	120, Bishopsgate-st. Wn
Langlaagte Est. G	1 1/2	1 1/2	1	—	—	—	Hand	59, Holborn Viaduct
" Royal	1 1/2	1 1/2	1	—	—	—	—	2, Drapers-gardens.
" Star	1 1/2	1 1/2	1	—	—	—	—	—
Lisbon-Berlyn G	1 1/2	1 1/2	1	—	—	—	Lydenburg	Suffolk House.
Lon. Paris Fin & M.	1 1/2	1 1/2	1	—	—	—	—	—
London & S. A. Ex.	1 1/2	1 1/2	1	—	—	—	S. Africa	52, Old Broad Street
Lulpards Vlei	1 1/2	1 1/2	1	—	—	—	Hand	19, Finsbury-circus.
Lydenburg Estate	1 1/2	1 1/2	1	—	—	—	Lydenburg	Warnford-court. J
" Id & Exp.	1 1/2	1 1/2	1	—	—	—	—	85, Gracechurch Street
" M.G. Est.	1 1/2	1 1/2	1	—	—	—	—	120, Bishopsgate St
Main Reef (New) G	1 1/2	1 1/2	1	—	—	—	Hand	15, George St. MnH
Malmant Gold Syn	1 1/2	1 1/2	1	—	—	—	Transvaal	Throgmorton St.
Marie Louise	1 1/2	1 1/2	1	—	—	—	Hand	15, George St. Mn H
Marivaal Nigel	1 1/2	1 1/2	1	—	—	—	—	—
Mashon. Agency	1 1/2	1 1/2	1	—	—	—	Mashonid	8, Old Jewry, E.C.
" Central	1 1/2	1 1/2	1	—	—	—	—	—
Matabele'd G. R'	1 1/2	1 1/2	1	—	—	—	Matabele'd	3, Copthall-buildings
May Con. (New) G	1 1/2	1 1/2	1	—	—	—	Hand	4, Lothbury.
Meyer & Charl. G	1 1/2	1 1/2	1	—	—	—	—	1, Crosby Square. J
Mineva	1 1/2	1 1/2	1	—	—	—	—	—
Mines Selection	1 1/2	1 1/2	1	—	—	—	—	—
Modderfontein. G	1 1/2	1 1/2	1	—	—	—	Hand	Winchester House.
" B' Extensn.	1 1/2	1 1/2	1	—	—	—	—	23, Br'd St. Avenue.
Molynex Consoi.	1 1/2	1 1/2	1	—	—	—	Modderfnt	15, George Street
Moodies	1 1/2	1 1/2	1	—	—	—	—	28, Austin Friars
Mosambique	1 1/2	1 1/2	1	—	—	—	S.E. Africa	120, Bishopgate st
Namaqua	1 1/2	1 1/2	1	—	—	—	Namaquald	—
New African	1 1/2	1 1/2	1	—	—	—	—	—
" Buifontein D	1 1/2	1 1/2	1	—	—	—	Griguland	83, Hatton Garden.
" Chimes	1 1/2	1 1/2	1	—	—	—	Hand	S. Drapers Gardens
" Comet	1 1/2	1 1/2	1	—	—	—	Hand	8, Old Jewry, E.C.
" Cronus	1 1/2	1 1/2	1	—	—	—	Hand	Winchester-house.
" Heriot	1 1/2	1 1/2	1	—	—	—	Langlaagte	120, Bishopsgate-st. Wn
" Jageraf. D	1 1/2	1 1/2	1	—	—	—	Hand	96, Gresham Ho E.C.
" Kleinfontein G	1 1/2	1 1/2	1	—	—	—	Transvaal	5, Copthall-buildings
" Midas	1 1/2	1 1/2	1	—	—	—	Hand	Winchester House
" Primrose G	1 1/2	1 1/2	1	—	—	—	Hand	120, Bishopsgate-st. W
" Rietfontein G	1 1/2	1 1/2	1	—	—	—	Hand	2, Drapers-gardens.
" S. Augustine D	1 1/2	1 1/2	1	—	—	—	Griguland	Warnford-st. E.C.
" Sps. Bona. G	1 1/2	1 1/2	1	—	—	—	Hand	20-1, St. Swithin's-lane
" Steyn Estate	1 1/2	1 1/2	1	—	—	—	Hand	24, N. John-st. W.C.
"	1 1/2	1 1/2	1	—	—	—	Heidelberg	18 Bury Street pl.

AFRICAN MINES—(Continued).

Name.	Closing Price, Oct. 23, 1896.	Closing Price, Oct. 16, 1896.	Am't. of Share	When last X'd and Dividend.	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office.
Nigel	2 1/2	2 1/2	1	—	—	—	Hand	36, Gresham Ho. E.C.
" Deep	1 1/2	1 1/2	1	—	—	—	Hand	8, Old Jewry
North Charterland	1 1/2	1 1/2	1	—	—	—	Hand	Winchester House
" Randfontein	1 1/2	1 1/2	1	—	—	—	Hand	8, Prince street
Nourse Deep	1 1/2	1 1/2	1	—	—	—	Hand	120, Bishopsgate-st. Wn
Oceana Consolidatd	1 1/2	1 1/2	1	—	—	—	Hand	Werb Lyn
" Developmt	1 1/2	1 1/2	1	—	—	—	Hand	12, Austin Friars.
" Minerals	1 1/2	1 1/2	1	—	—	—	Hand	Heidelberg.
Orange F.B.E. D	1 1/2	1 1/2	1	—	—	—	Hand	—
Orion (New) G	1 1/2	1 1/2	1	—	—	—	Hand	10, Moorgate-st.
Paarl Central	1 1/2	1 1/2	1	—	—	—	Hand	120, Bishopsgate-st. Wn
Pardy's Mozamb.	1 1/2	1 1/2	1	—	—	—	Hand	8, Old Jewry.
Figgs Peak	1 1/2	1 1/2	1	—	—	—	Hand	—
Porges Randfont.	1 1/2	1 1/2	1	—	—	—	Hand	—
Potchefstroom G	1 1/2	1 1/2	1	—	—	—	Hand	—
Princess Estate G	1 1/2	1 1/2	1	—	—	—	Hand	—
Rand Central Ore	1 1/2	1 1/2	1	—	—	—	Hand	—
Randfontein G	1 1/2	1 1/2	1	—	—	—	Hand	—
Rand Mines G	1 1/2	1 1/2	1	—	—	—	Hand	—
Rand-Rhodesia Ex	1 1/2	1 1/2	1	—	—	—	Hand	—
Rhodesia Ex & Dv.	1 1/2	1 1/2	1	—	—	—	Hand	—

AUSTRALIAN AND NEW ZEALAND MINES.

Is made to order	Sum	Closing Price, Oct. 23, 1896.	Closing Price, Oct. 16, 1896.	Am't. of Share	When last X'd and Dividend.	Called up per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office	
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	2/ Sept. 30 '96	1 0 0	100,000	L'kn N.S.W.	4-6, Throg. Avenue.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	160 1/2 '95	1 0 0	125,000	W. Austral	Worcester House.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	3/ Sept. 30, '96	0 10 0	40,000	W. Austral	3, Princes Street.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	5/ Oct. 20 '95	0 10 0	40,000	W. Austral	3, Princes Street.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	100,000	N. Zealand	30, S. Swithin's Lane.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	90,000	Cool., W.A.	4, Gt. Winchester St.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	375,000	Gymp. Qld	20, Bucklebury St.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	10,000	S. Austral.	6, Queen-st. place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	218,000	S. Austral.	42, New Broad-street
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	574,799	Bark.N.S.W	Winchester House.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	503,000	H'grs N.S.W	Hillgrove, N.S.Wale
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	480,000	Publ., W.A	38, Coleman Street.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	150,000	Coolgardie	151, Cannon Street.
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	140,000	Coolgardie	4, Bishopgate St. Wn
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	500,000	Coolgardie	1, Metal Exch. Bldg
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	82,299	Coolgardie	4, Bishopgate St. Wn
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	120,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	70,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	72,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	240,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	98,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	67,500	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	160,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	115,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	52,522	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	200,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	122,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	256,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	75,250	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	246,779	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	258,533	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	104,467	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	90,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	150,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	115,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	75,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	499,400	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	499,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	2,500	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	400,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	9,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	150,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	50,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	300,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	450,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	175,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	100,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	150,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	90,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	120,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	80,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	240,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	240,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	175,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	50,000	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.	2 1/2	3	2 1/2	3	1 0	—	1 0 0	—	Coolgardie	16, S. Helen's Place
Adolph's Lamp Co.										

AUSTRALIAN AND NEW ZEALAND MINES—(Continued).

Name.	Closing Price. Oct. 23, 1895.	Closing Price. Oct. 16, 1895.	Am't of Share	When last XD Dividend	Called up Per Share.	Amount of Stock or No. of Shares Issued.	Situation of Mine.	Head Office
Waihi..... G	6 3/4	6 3/4	1/2	1/2	1 0 0	131,000	Th'ams NZ	11, Abchurch-ln. E.O
" G. Junction.....	1 1/2	1 1/2	1	1	1 0 0	110,000	Uthmaniz	15, Finsbury Circus.
" Silveston	1 1/2	1 1/2	1	1	1 0 0	60,000	Oh'minZ	23, College Hill
Waitekauri	4 3/4	4 3/4	1 0	1 0	1 0 0	130,000	WkaurinZ	11, Abchurch Lane
" Central	8	9	1/2	1/2	1 0 0	120,000	"	63, New Broad St.
" Cross	14 3/4	14 3/4	1 1/2	1 1/2	1 0 0	130,000	"	10a, Coleman Street.
" Extended	6 1/2	7 1/2	7/8	7/8	1 0 0	120,000	"	63, New Broad St.
" United	1 1/2	1 1/2	1 1/2	1 1/2	1 0 0	130,000	Ha'aki, NZ	63, New Broad St.
Waratah	12 1/2	13 1/2	12 1/2	13 1/2	1 0 0	50, 00	"	43, Thrcsmesdile st
Water Trust Min.	3 1/2	3 1/2	3 1/2	3 1/2	1 0 0	100,000	Crydan, N Z	43, Thrcsmesdile st
W. of Nations	3 1/2	3 1/2	3 1/2	3 1/2	1 0 0	120,000	W. Austral	Brom' Street House
Wentworth	3 1/2	3 1/2	3 1/2	3 1/2	1 0 0	500,000	N. S Wales	77, Bishopsgate-st.
W. A. Develop'	3 1/2	3 1/2	3 1/2	3 1/2	1 0 0	50,000	"	4-6, Throgmort. Av.
W. Aust. G. Conces.	3 1/2	3 1/2	3 1/2	3 1/2	1 0 0	255,000	W. Austral	43-53, Moorgate court.
W. A. E. & Fin.	3 1/2	3 1/2	3 1/2	3 1/2	1 0 0	200,000	"	33, Old Broad st., E.O.
W. Austral. G.F.	6 1/2	6 1/2	6 1/2	6 1/2	1 0 0	65,000	Coolgardie	54,
" Mines Divl	1 1/2	1 1/2	1 1/2	1 1/2	1 0 0	42,000	"	28-29, S. Swithin's ln
" Aust. Pioneer	6 1/2	7 1/2	7 1/2	8 1/2	1 0 0	320,000	W. Austral	3, Finsbury Street
" Share Corp.	3 1/2	3 1/2	3 1/2	3 1/2	1 0 0	19,993	"	257, Winchester Ho.
" Venture	1 1/2	1 1/2	1 1/2	1 1/2	1 0 0	200,000	"	139, Cannon-street.
West Boulder	1 1/2	1 1/2	1 1/2	1 1/2	1 0 0	—	"	28, St. Swithin's ln
" White Feather	1 1/2	1 1/2	1 1/2	1 1/2	1 0 0	—	"	3, Princes Street.
Wentstock	2 1/2	2 1/2	2 1/2	2 1/2	1 0 0	60,000	Coolgardie	28 & 29, S. Swithin's ln
Zeeland Montana S	par	par	par	par	1 0 0	137,500	Kringsh NZ	8, Drapers Gardens.
"	—	—	—	—	1 0 0	66,000	Tasmania	1, Queen Victoria st
"	—	—	—	—	1 0 0	12,000	"	"

EUROPEAN MINES.

amillos	L	1 1/2	1 1/2	1 1/2	1 1/2	2 0	2/- Sept 18 '96	2 0 0	35,000	Spain	8, Queen-street-place
onsett Ore		7 1/2	7 1/2	7 1/2	7 1/2	1 0	5/- July 94	1 0 0	55,200	Spain	19, Grey-st. N'castle.
ortuna	L	7 1/2	1 1/2	7 1/2	1 1/2	2 0	1/3 Sept 18 '96	2 0 0	30,400	Spain	"
iboli	C	2 1/2	2 1/2	2 1/2	2 1/2	5 0	2/- Sept. 30 '96	5 0 0	15,350	Italy	Dashwood Ho., E.C.
inanes	L	5 1/2	5 1/2	5 1/2	5 1/2	3 0	10/ Sept 18 '96	3 0 0	18,572	Spain	6, Queen-street-place.
ason & Barry	C	2 1/2	3 1/2	2 1/2	3 1/2	5 0	2/ May 23 '94	5 0 0	67,839	Portugal	87, Cannon-street.
etacora	G	5/ 6/	5/ 6/	5/ 6/	5/ 6/	3 0		3 0 0	14,000	Coueron	6-7, Queen-street-pl.
enigbaud	SL	24 1/2	24 1/2	23 1/2	23 1/2	10 0	11/8 Dec. '96	10 0 0	325,000	Spain	30, St. Swithin's-lane
o Sinto	C	101	103	101	103	120 0	12 May 1, 95	100 0 0	63500,000	Servia	120, Bishopsgt-st. Wn
o (1st Mrt. Bds)		101	103	101	103	100 0		100 0 0	1,500	Spain	Glashow.
pari	C	5 1/2	5 1/2	5 1/2	5 1/2	10 0	7/- Apr 29 '96	10 0 0	5,500	Germany	Walbrook Ho., E.C.
est Post Pre. Pref		—	—	—	—	10 0	7/ June 30 '96	10 0 0	14,050	Prussia	"
o, Prussian Fer.		—	—	—	—	10 0	7/ June 30 '96	10 0 0	99,634	Prussia	17, Victoria-st., S.W
o, Prussian Gr.		—	—	—	—	1 0	4 1/2 Dec. 31, 95	1 0 0	9,200		
nfahrt		—	—	—	—	1 0	3 1/2 Dec. '94	1 0 0			
"		—	—	—	—	1 0	3 1/2 Dec. '94	1 0 0			

NORTH AMERICAN MINES

Alaska Mexican...G	1 1/2	2	11 1/2	11 1/2	\$5	44-5d Oct. 29 '96	\$5	173,500	Alaska.....	30, St. Swifth's-In.
Treadwell...G	4 1/2	4 1/2	5 1/2	5 1/2	\$25	1/6 Oct. 29, '96	\$25	200,000	Montana...	" "
Conda.....C	6 1/2	6 1/2	6 1/2	6 1/2	\$25	10 May 9, '96	\$25	1,200,000	Arizona...	74, Geo. st., Edinbor
ons (Prof.) Cu	50/3 51/		50/3 50/9		4 0	1/6 July 15, '96	4 0 0	159,920	" "	"
% A Deben.	109 110		110	100 0	6 1/2	7 May 14 '96	100 0 0	\$135,300	" "	"
% B Deben.	100		100	100 0	3		100 0 0	\$181,300	" "	"
amar.....GS	12/6 13/6	13/ 14/		1 0	1/6 Feb. 13 '96		1 0 0	400,000	Idaho.....	6, Drapers-gardens.
ens Custer GS	/3 /9	-6 1/ 1/		1 0			0 19 9	\$20,000	Colorado...	Winchester Ho. E.C
ens.....G	6/6 7/6	-6 6 7/6		5/			0 5 C	125,000		
M'g. Assoc.	5 1/2	6	5 1/2	6	5 10	12/- May 14 '96	5 10 0	27,469	C. Breton	Blomfield House.
en Feather ..G	3 1/2	9 1/2	3 1/2	9 1/2	1 0		1 0 0	180,000	California	St. Stephens Co E.C
Gate.....G	3/6 4/6	2/6 3/6	1 0				0 16 6	79,600	" "	
Leaf.....G	-3/3 1/3	/9 1/3	1 0				1 0 0	300,259	Montana	4, Draper's Gardens
Mines.....G	19 1/2	11 1/2	11 1/2	11 1/2	1 0		1 0 0	250,000	Brit. Col.	1, Leadenhall St., EC
ushua.....G	/6 1/6	1/6 1/6	1 0		-6 Nov. 14, '94		1 0 0	300,000	Arizona...	6, Draper's Gardens.
val Valley G	/6 2/6	/6 1/6	5/				0 5 0	\$40,300	California	14, Cornhill, E.C.
on Goldfields		/2	5 0				0 5 0	405,635	" "	11, Poultry, E.C.
aca.....GS		/3 /9	5/	1/3	Oct. '82		0 4 6	405,080	Colorado	11, Poultry, E.C.
.....G	-9/3 1/3	/9 1/3	1 0				1 0 0	200,000	Mexico ...	20, Bucklersbury, EC
ans.....GS	2/6 3/6	2/6 3/6	1 0		-3 June 26 '96		0 19 0	657,158	Montana	Gresham House, E.C
rejo.....GS	1/3 1/9	1/3 1/9	1 0				1 0 0	418,888	Mexico ...	32, Old Jewry, E.C.
litos(D)GS		3/6 1/6	1 0		-6 Mar. '80		1 0 0	100,000	" "	110, Cannon-street.
ond ...GSL	3/6 1/6	1/6	5 0	1/-	Dec. 16 '95		5 0 0	54,000	Nevada ...	44, Coloman street.
uttes.....G	3/6 3/6	3/6 3/6	2 0		-3 Apr. 29 '96		2 0 0	122,500	California	138, Leadenhall-st
mas Eur. G		3/6 3/6	2 0		-8 Apr. 29 '96		2 0 0	140,260	" "	
ale.....G	-3/3 -3/3	/3 /9	\$1		-2 Sep. 28, 9		81	1,000,000	Colorado	20, Abchurch Lane
ake Placers	1 1/2 1 1/2	3/6 1	1 0	3/-	Feb. '95		1 2 0	6,000		5, Lawrence P. H. W

SOUTH AND CENTRAL AMERICAN MINES

million PIA RydstMB	8 1/4 9 1/4	8 1/4 9 1/4	8 1/4 9 1/4	8 1/4 9 1/4	10 0 100 0	7/0 Feb. 27 '98 6% July 1 '96	10 0 100 0	35,000 \$100,000	Autofagst.	123, Bishops-st W
concessions	1/3	9	1/3	9	2/	—	0 2 0	150,000	S. Luis	3 & 5, Queen Street.
.....S	19/16	19/16	7/8	1	2 0	1/- Apr. '94	2 0 0	125,000	Peru	51, Leadenhall street
Nit. ....N	1/8	1	1/8	1	5 0	2/6 Dec. 16, '95	5 0 0	32,000	Chili	12, King-st., Liverp'l
n Hy. ....C	2 1/2	2 1/2	3 1/2	3 1/2	1 0	1/- Jy 26, '95	1 0 0	75,000	Colombia	10, Blomfield-street
.....G	5 1/2	5 1/2	5 1/2	6	2 0	2/- May 23, '96	2 0 0	100,000	Chili	Dashwood House, E.C
A "G	5 1/2	5 1/2	5 1/2	6	1 0	—	1 0 0	49,553	Colombia	Manchester.
B "G	6 1/2	7	7	7 1/2	1 0	k.wApr 23 '96	1 0 0	30,000	"	"
.....G	3 1/2	3 1/2	1 1/2	3 1/2	5 0	3 1/2 d. Feb. '94	5 0 0	257,600	Venezuela	8, Bishopsgt.-st, W
& B. ....G	1 1/2	1 1/2	1 1/2	1 1/2	1 0	9d. Oct. 15 '96	1 0 0	128,662	Colombia	134, Gresham House
.....G	1/	1/6	1/8	5/	1 0	—	1 0 0	199,948	Arg. (& I.)	3-5, Queen-street, E.C
.....GS	—	—	3/8	5/	1 0	—	1 0 0	120,000	Honduras	14, Union st, Old Bld
.....G	—	—	1/6	2/8	2/-	—	0 2 0	105,269	Nicaragua	139, Cannon-street.
.....N	1 1/2	2 1/2	1 1/2	2 1/2	5 0	15p.c. Dec. '94	5 0 0	120,000	Tarapaca	3, Gracechurch st;
N	8 1/2	6	5 1/2	5 1/2	5 0	5/- June 26 '96	5 0 0	110,000	Chili	70,
N	7 1/2	8 1/2	7 1/2	8 1/2	5 0	15/- May 14, '96	8 0 0	22,000	"	Liverpool.
6. ....N	2 1/2	2 1/2	2 1/2	2 1/2	5 0	3 1/2 Nov. '95	5 0 0	10,000	"	9, Gracechurch-st.
(Prof.)	3 1/2	4	3 1/2	4	5 0	8 1/2 Nov. 28 '95	5 0 0	22,000	"	"
.....N	1 1/2	3/16	1 1/2	3/16	1 10	1s. Dec. '94	1 10 0	130,000	"	"
.....N	7/16	2 1/4	7/16	2 1/4	1 10	8 p.c. Feb. '95	1 10 0	130,000	Tarapaca	50, Lime-street, E.C
.....N	7/8	1	7/8	1	100 0	6 p.c. Feb. '96	100 0	260,000	Colombia	"
.....G	1/3	1/8	1/6	1/8	1 0	1/- April '96	1 0 0	30,000	Colombia	5, Copthall Bu'ld'ngs
.....G	1/3	1/8	1/6	1/8	1 0	1/- Feb. '96	1 0 0	100,000	Brazil	10, Blomfield-street
.....N	4 1/2	5 1/2	4 1/2	5 1/2	5 0	4/- May, '95	5 0 0	72,000	Tarapaca	8, Queen-street-place
.....N	102 105	102 105	102 105	102 105	100 0	5% Oct. 1 '96	100 0	400,000	S. Luis	3 & 5, Queen Street.
.....N	103 108	103 108	103 108	103 108	100 0	5% July 1 '96	100 0	120,000	Chili	7 1/2 Old Broad-street
.....N	4 1/2	5 1/2	4 1/2	5 1/2	5 0	3/- Aug. 13 '96	5 0 0	100,000	"	"
.....N	102 105	102 105	102 105	102 105	100 0	5% Oct. 1 '96	100 0	\$475,000	"	"
.....N	103 108	103 108	103 108	103 108	100 0	5% July 1 '96	100 0	\$200,000	"	"
.....N	3 1/2	4 1/2	3 1/2	4 1/2	1 0	4 1/2 Nov 13 '95	1 0 0	327,650	Brazil	Finsby, Ho., Blm'd st
.....N	4 1/2	5 1/2	4 1/2	5 1/2	5 0	2 1/2 May 24 '95	5 0 0	32,000	Chili	12, King-st., Liverp'l
.....N	1 1/2	1 1/2	1 1/2	1 1/2	5 0	5/ Oct. 15 '96	5 0 0	75,000	"	9, Gracechurch-st
.....N	1 1/2	1 1/2	1 1/2	1 1/2	5 0	5/ Oct. 30 '95	5 0 0	32,000	"	"
.....N	1 1/2	1 1/2	1 1/2	1 1/2	5 0	2/ July 15 '96	5 0 0	29,000	"	Dashwood House E.C
.....G	3 1/2	3 1/2	3 1/2	3 1/2	10 0	1/3 Dec. '96	0 10 0	60,000	Brazil	Liverpool
.....G	3 1/2	3 1/2	3 1/2	3 1/2	5 0	5/- Nov. 15 '94	5 0 0	32,000	Tarapaca	3, Gracechurch-st.
.....G	3 1/2	3 1/2	3 1/2	3 1/2	5 0	10/May 29 '96	5 0 0	29,000	Chili	Dashwood House, E.C
.....S	8 1/2	5 1/2	5 1/2	5 1/2	5 0	5/- Mar. 18 '96	5 0 0	14,000	"	18, Finsbury-circus
.....S	3 1/2	4 1/2	4 1/2	4 1/2	5 0	5/- Mar 12 '96	5 0 0	6,000	"	"

PARIS LETTER.

A powerful bearing combination.—Influences in the Mining Market.—Position of Kaffirs.—Impediments to foreign mining enterprise.

(FROM OUR OWN CORRESPONDENT.)

THE influences affecting the mining market are so extremely complex that it is far from easy to analyse the present depression and draw deductions therefrom as to the future of gold mining shares. If the various influences were allowed to work out the salvation of this class of investment, there is no doubt that in course of time the market would stand on a more solid basis than it does at present. Unfortunately, every little untoward incident is being made the most of by the professional bears to depreciate values, and they have been doing this with so much success that a few days ago the Bourse was in the throes of a positive crisis. Now that investors have happily escaped the danger, mainly through the firmness of the leading bankers, they are trying to ascertain who are responsible for this persistent bearing movement. That a very powerful combination exists with a view of bringing down prices there is not the shadow of a doubt. For weeks past they have had the market under their entire control, and have manipulated all descriptions of securities in a way which shows them to be possessed of consummate cleverness and ability. Once the source of the evil is recognised, however, it is comparatively easy to apply the remedy. All sorts of suggestions have been made of late as to the character of this bearing element, and one of the leading Paris journals even goes so far as to give it a political origin. Our contemporary affirms that the campaign has been undertaken with a view to shaking the financial stability of this country, and that the immediate intention is to bring about the failure of the forthcoming Spanish loan. It accurately bases its affirmation on the fact that the bears have been especially busy in depreciating Spanish stocks, but to draw from this the deduction that the movement has a political character is to display more imagination than logic. As a matter of fact, all the leading authorities on the Bourse are agreed that the bearing operations are purely speculative, as is proved by the experience of mining shares, of which by far the greater bulk is in the hands of French and English holders. It is evident, moreover, that the bearing combination has nearly come to the end of its tether. Upon its becoming known that the depression in mining shares was the outcome purely of the speculative movement, and was influenced to only a small degree by the political and economical questions that have arisen in the Transvaal and elsewhere, the holders refused to dispose of their scrip at a sacrifice, and only the weak speculators have found themselves under the necessity of throwing their shares on the market, where, by the way, it was not difficult to find purchasers. Another element of confidence was afforded in the visit of Messrs. Barney Barnato, Frank Bell, and Alfred and Otto Beit, who have had frequent interviews with some of the leading financial houses, and it is believed that the outcome of this is a resolve on the part of the *haut finance* in London and Paris to take steps to arrest the depreciation of South African values.

It must be recognised, however, that the mining market is still susceptible to the many unfavourable influences which have been so industriously exploited by the bears. In the first place the position of the *Coutilase* becomes worse almost every week. As at present constituted, it is undoubtedly a perpetual menace to the stability of the mining market; but, in spite of the repeated suggestions that it should be suppressed, there is no probability of the jobbers giving way, any more than there is of the body being amenable to any reform. The only hopes in the certainty that a good many of the weak members will be compelled at some time or another to liquidate their affairs and cease operations. For a twelvemonth past they have been looking forward to a recovery in Kaffirs, which would permit of their getting out of the difficulties which beset them; but as this recovery seems as far off as ever, it is not easy to see how they can hold on much longer. Though their failures are anticipated, it is none the less certain that they will create a panic on the Bourse when they do take place, but when the market will have got over the scare, it will benefit all the more from the shaking out of these weak dealers. As holders have consequently made up their minds that a day of reckoning must come sooner or later, they are inclined to attach some importance to the various political and economical questions that are affecting finance generally. The monetary struggle in the United States is being magnified to a much greater extent than is warranted by the probable issue, and the several matters pending in the Transvaal are giving rise to more anxiety than they would if the Bourse were freed from internal difficulties. Again, investors and speculators alike no longer look upon the immediate future of the Rand mining industry so confidently as they did in the past; but, perhaps, this is more of an advantage than otherwise, by removing one of the immediate incentives to reckless speculation. As an investment it is, of course, recognised as offering an excellent field for remunerative returns, but investors no longer delude themselves with the belief that the production of gold on the Witwatersrand will go on increasing in steady ratio. That it will increase they are thoroughly convinced, though any expansion of the output sufficient to pay large dividends lies in the future and not in the present. With increased facilities for mining the prospects for the Rand shareholders are still brilliant, and where they can do so they hold on to their shares unmoved by the agitation which is going on around them.

The steady downward movement in Kaffir prices, which early in the week touched a point that seemed to threaten an immediate collapse, has been arrested as the result of more favourable reports from the Stock Exchange, and on Thursday there was a perceptible tendency towards a recovery. Speculators who had been waiting their opportunity began to purchase much more freely than for a long while past, and while all the shares were firmer they were quoted up in some cases several points. Gold Fields were the first to benefit from this renewed confidence, and Chartered, Ferreira, and Robinson Mines were also quoted at higher figures. Shares that are usually purchased for investment did not improve to the same extent, but still the demand for them was fairly satisfactory. Opinion is divided as to whether this improvement is likely to continue, and while most of the brokers hold that there is no reasonable cause why prices should not be maintained at a more reasonable level, they are far from anticipating that the present firmer tone will develop into a permanent revival.

Foreign mining enterprise is receiving very little attention at the moment, and in nearly every direction the flotation of new companies is being delayed until a more favourable moment. Some time ago there was a prospect of a revival of silver and copper mining in Spain, whose vast resources in this respect have, perhaps, received less attention than they deserve, but the promoters of the different concerns have not thought it advisable to invite subscriptions from the French public in the present state of the market. Outside South Africa and Australia, the only country where any real progress is being made in mining enterprise is Russia, where the capital subscribed several months ago, mainly in France, has permitted of the companies carrying on a very active work of development. It appears that in Siberia alone there are no fewer than 855 gold mines being exploited by 206 companies, and the latest statistics of the yield show that, as a rule, these mines are very remunerative properties. No doubt, with the completion of the Trans-Siberian railway, the facilities for carrying out the mineral development of that country will be enormously increased, and there is indeed every prospect of Siberia attracting a considerable amount of attention among European investors before long.

MAYHIMON'S MONTHLY MINING HANDBOOK for mid-October—read, replete, as usual, with a mass of useful information

CORRESPONDENCE.

We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.

ENGLISH AND FOREIGN MINING EXPERTS.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—Your leading article in the issue of the 26th ult. has doubtless been read with extreme interest by a great many of your readers. It deals with a subject often discussed by those engaged in mining, and gives voice to a very general impression—the idea, namely, that the preference shown for American mining engineers in the South African gold fields marks the possession of certain qualities not shared by their English brethren of the same profession.

You make the general deduction that the teaching at the English technical schools does not give the practical training afforded by American and Continental schools of mines. Permit me to disagree with you in the pleasant way that one man may with a friend who has gone off on the wrong track. Many years spent in western mining regions have enabled me to appreciate the abilities of American mining engineers, and to compare them with the Englishmen whom I have known on the colonial gold fields.

You regretfully concede that the English experts and Cornish mine captains have yielded the first place to the American. Why? because of a more practical school training. No, Sir—not that. The German school whose graduates are most brought in touch with actual mining while undergoing their technical education are notably the least practical of mine managers. The man who gets a smattering of practice and theory goes into the field thinking he knows it all, and soon comes to grief. He who gets a thorough theoretical foundation enters the field to find that he knows nothing of the practice, and, therefore, pitches in to acquire the necessary experience. He then discovers, to an increasing degree, the value of his technical education. Nothing is so aidful to a fellow starting out as the consciousness that he has a world to learn, and that he has simply been taught how to learn it properly.

The American engineer to-day commands a bigger salary than the Englishman, because he has been trained in the great school of a wide experience. The colonies offer a curiously limited variety of experience. The gold ores, for the most part, are of a simple character, and only require stereotyped methods of reduction. The conditions have not evoked much exceptional practice. Thus, for example, when Broken Hill was first undergoing development it was found that, because of the non-occurrence of such a large silver-bearing lode elsewhere in Australia, there were not the experienced men required to direct the large operations then about to be started, and, very properly, the assistance was asked of those who had been managers at the big silver mines of Nevada.

The English school training can hold its own; it is the want of a sufficiently varied experience in the field, due to the limited opportunities offered by the mining regions under British rule, that compels the Englishman to step down as soon as he meets with new and peculiar conditions. This one State, Colorado, with a mining region about 380 miles long and 200 miles wide, offers examples of a greater variety of ore occurrence, mining practice, milling methods, and smelting processes than the whole of Australasia. I say this advisedly.

The school of mines that most determines the future capability of a mining engineer is not that of the lecture room and the laboratory, but the mine and mill, where he first learns how to apply an adequate technical training. The Englishman who goes to the colonies finds a tenacious preference for old methods, and an obstinate disregard of the experience of other regions, which is in strong contrast to that progressiveness and adaptability which have enabled the mining regions of America to undergo so tremendous a development. The conservatism—to give it a kindly designation—of Bendigo and Ballarat would handicap any young man who has to compete in the same field of activity with those who have taken their first working lessons amid the unshackled and progressive captains of industry, who direct operations in California and Colorado.

The associates of the Royal School of Mines yield in nothing to their friends from the Columbia School of Mines of New York, which, in the United States, has produced the largest number of successful men. In Colorado there are four associates of the old school, and each of them is a distinctly successful man. Not one of them has cause to be other than grateful for the teaching of men like Huxley, Judd, Smyth, and Austin. Nor have they found that their training has made them unpractical.

The gentlemen who have been chosen from California to direct operations on the Rand are some of them very experienced men, some decidedly are not, and as a body they are superior to an equal number of English mining engineers, not in their scientific and technical education, but in the one conclusive factor, that they have had experience in the mining of large bodies of low grade ore and in the handling of big enterprises, such as are rare in the colonies but common in the mineral empire of the Great West.—Yours faithfully,

Denver, Colorado, October 6. T. A. RICKARD.

REPORTS FROM THE MINES.

BRITISH MINES.

LEADHILLS.—W. H. Paul, October 19: Brown's vein. The stope above the 115 fathom level north of Jeffrey's shaft will produce 20 cwt. of lead ore per fathom. The drift southwards over same level is in a vein 4 feet wide, charged with spar and good stones of ore. The vein in drift above the 115 north of rise is yielding 15 cwt. of lead ore per fathom. The 55 fathom level going south of Wilson's shows a vein 4 feet wide, containing a nice mixture of spar but without ore. The 50 fathom level driving north of main rise is in a vein over 4 feet wide, mixed with spar and lead ore valued at 25 cwt. per fathom. The stope above this level north of main rise is producing 30 cwt. of lead ore per fathom. Gripp's adit level north-west on Dobela vein is in a vein charged with gossan spar and good stones of ore. There is nothing of moment to report in regard to the several trial crosscuts, &c., all of which are being pushed ahead. The flues at the smelting works having been thoroughly cleaned out, we resumed ore smelting on one hearth this morning. The slag hearth has also been started to deal with a quantity of slag accumulated there. The snow has disappeared, and we are now having rainy weather.

WEARDALE LEAD.—Report on Weardale Company's Mines for the week ending October 17: Groverake. Sinking sump from 60 fathom level, vein 9 feet of spar, looking better for ore, worth 10 cwt. per fathom. Groverake tribute, ore for the week 12 bins. Boltburn. Little limestone drift east. Strong plate and grey beds. Stopes in north flats from Watt's level worth 36, 38, 40, 18, and 10 cwt. per fathom. Stos in south flats worth 14, 18, 16, 12, 14, 12, and 18 cwt. per fathom. Vein slopes worth 16 and 18 cwt. per fathom. Greenlaw. Racer drift, vein divided, still working both parts, worth 12 cwt. per fathom. Slopes worth 12, 13, 12, and 18 cwt. per fathom. Lows's drift, vein worth 10 cwt. per fathom. Slopes worth 12 and 12 cwt. per fathom. Bedding. Crosscutting north from 84 sump, are in 126 fathoms. Have cut some more vein composed of rider and spar with some ore, but are not through yet. The vein banding is very strong, and is bearing to the north. Stopes in 84 level east worth 16 and 12 cwt. per fathom. Killhope. Middle Grove shaft. We have stripped and cleared out the level to Baly's ground, and are now getting out the house. Ore raised for the week 48 tons, ore

dressed for the week 47 tons, ore and slag smelted for the week 70 tons, producing 39 tons of pig lead.

MISCELLANEOUS.

ANGLO-MEXICAN.—The following is the (main statement of) expected production for the month of June:—Production 10,531, expense \$42,217.

COOYA.—The West Australian mine manager in his last letter reports that we go down the stone gets better. The water comes in very early towards the big mine Day Dawn.

CHAMPION EXTENDED AND HOME RULE.—The following is an extract from acting mine manager's letter of September 5:—We managed to get the stone finished on Saturday last in time to clean up and send the ore that evening with the results as per time of August 30. The stone put down was fairly taken from the five shafts on the Extended lease without the ore from Dunlop's shaft. At One I invited a number of representatives from the Press to inspect stope, with the result that it was a success. The stone was exhibited in the shop of Hay Street. Admittedly best ever seen here. It was worth sending to Melbourne for exhibition. To which they were sent here, to him to forward samples, and received his reply:—"Packed special train to state richest stone handled by them. Created general astonishment."

ORKEBUS AND PORT.—The following is the latest report from the manager, dated September 12:—The main shaft has been sunk 1 foot below the level of the platform over wall. The crosscut from west main shaft to level has been furthered 9 feet. The crosscut from east main shaft to level now driving east. The crosscut east from shaft 20 feet. Discontinuing and from end of chamber, total distance from shaft 20 feet. Driving in formation September 5: 420 feet level driven 6 feet, total 231 feet. Driving in formation wall has widened to 3 feet, and carries a good percentage of fall ore. In the end of the drive we cut into a crosscourse with a vein 2 inches wide of lead ore, letting down a little water. The country is better for working of ore against the hanging wall. In the north end of the mine there is 9 inches of ore against the hanging wall, and 1 foot of ore in the footwall, with a horse of mullock 2 feet wide. In the south end of the mine mullock appears to be cutting out.—500 feet level. Driven 1 foot, total 231 feet. Lode in face 3 feet wide, but is rather mullocky, being composed principally of siderite, calcite, iron pyrites and decomposed slate. From the appearance of the face we shall be likely to meet with good ore before driving very far. We are now getting down a little water. The country is better for working of ore against the hanging wall. Driven 3 feet, total 234 feet. Lode in face 6 inches wide, and carrying high grade fall ore and yellow copper. Driven 3 feet, total 237 feet. Driven 5 feet, total 242 feet. Driven 5 feet, total 247 feet. Driven 5 feet, total 252 feet. Driven 5 feet, total 257 feet. Driven 5 feet, total 262 feet. Driven 5 feet, total 267 feet. Driven 5 feet, total 272 feet. Driven 5 feet, total 277 feet. Driven 5 feet, total 282 feet. Driven 5 feet, total 287 feet. Driven 5 feet, total 292 feet. Driven 5 feet, total 297 feet. Driven 5 feet, total 302 feet. 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The 425 feet level north has been extended 12 feet, now 85 feet from the shore. The lot is 15 inches wide, composed of quartz, crystalline gneiss and schist.

the manager has done all work here in an absolutely satisfactory manner, and deserves great credit for the way he has managed it. As, if you remember this is over 400 miles from Geraldton, the party that we have so successfully erected, and all the masonry, &c., round the boilers is excellent—in fact, both Wilson and McAlister (the underground manager) have fairly saved for the company. They were anxious to justify the confidence put in them when I was permitted to place them in command. The new ore body 12 feet in width recently cut adds largely to her value, and there are several other reefs.

GOLDEN HORSESHOE.—The manager's report for fortnight ending September 10: Main shaft, north drive, 32 feet driven during fortnight, total 58 feet. The lode in this drive has considerably more iron associated with it than previously. It does not, however, vary to any extent in value. Up to the present the drive has been on the hanging wall side of the lode. We have now put the men to cross it across the lode with a view to proving width, and ascertaining whether it improves in value or not.—Main shaft, south drive, 13 feet driven during fortnight, total 27 feet. This lode has the same character; the east considerably better dipping east at about 25° to 30°. It appears to dip to be on the cup of the lode or formation in this face, which indicates that the formation dips or pitches on its course as it goes south. In the No. 3 shaft, which is situated about 5 chains north of the main shaft the capping occurs in the crosscut, and 53 feet from the surface; consequently, had our main shaft been 25 or 30 feet further south we should have crossed it over the top of the formation without having any trace of it. We have discontinued the extension of the shaft.

GREAT BUNYONG ESTATE—Report to hand states: Heavy water cut in the alluvial shaft at a depth of 27½ feet. Binking term nearly suspended, and preparations now being made to send down the 18 inch lift. Quartz shaft of increased dimensions in very hard blasting sandstone. Progress less rapid than hitherto.

HANNAH'S REWARD.—The manager reports under date September 15: After opening ceremony of the railway took place on Tuesday, September 8, and after a successful run, the Railway Commissioners, on Wednesday, September 9, already caused a reduction of nearly £1 per ton on carriage. On Friday, the Governor of the colony, Sir Gerard Smith, honoured us with his presence. He desired me to tell him about that he had visited the mine, and that he had experienced great pleasure and satisfaction at his reception, and was satisfied from what he had seen that the mine had a great future before it. No. 2 level rise is now up 17 feet, or 6 feet for the week. This rise is in a fine body of ore, pure, and strong, affording a fair amount of pyrites. A fire assay of a sample in bulk as broken, gave for the first time, 15 ounces of gold per ton. In another 13 or 11 feet we ought to connect with No. 1 winze.—No. 3 level. The water has risen 2 feet 6 inches for the week, making a total of 5 feet 9 inches above the plat. Water shaft has been sunk a further depth of 9 feet 2 inches, making a total of 107 feet. The hard material has now been passed through. It is a lode material and carries gold. As the country has become soft again, and I hope to make good progress with the sinking of the shaft.

HARRIETVILLE.—Superintendent's report for fortnight ending August 23:—Tiddie Mine, Bibby's lode. Winze below 150 feet level at back of tunnel F sunk 21 feet. Lode 1 foot wide and valued at ½ ounce of gold per ton.—Slope at back of same level. Lode 1 foot wide and valued at 6 dwts. of gold per ton.—Stop at back of 100 feet level. Lode 15 inches wide, averaging about 12 dwts. per ton.—R-turns. We cleaned up on the 18th inst. after crushing 122 tons of ore, and obtained 33 ounces of gold, including 29 ozs.—8 dwts. from crosscutting east, and 4 ozs. from the main auriferous vein. The latter is the hope of finding the continuation of the main auriferous shaft, which is pitched at 30° to 35° through a vein of slightly auriferous quartz. We are continuing to drive towards the main auriferous vein.—Superintendent's report for fortnight ending September 11: Tiddie Mine, Bibby's lode. Winzes below 150 feet level at back of tunnel F sunk 21 feet, total 50 feet; communicating to drive north of tunnel on flat lode. Bibby's lode is intersected by the latter at this point and this will account for the difficulty we have experienced in tracing its course below the 150 feet level. The result of the trial on the flat lode is the hope of finding the continuation of the main auriferous shaft, which is pitched at 30° to 35° through a vein of slightly auriferous quartz. We are continuing to drive towards the main auriferous vein.—Superintendent's report for fortnight ending September 11: Tiddie Mine, Bibby's lode. Winzes below 150 feet level at back of tunnel F sunk 21 feet, total 50 feet; communicating to drive north of tunnel on flat lode. Bibby's lode is intersected by the latter at this point and this will account for the difficulty we have experienced in tracing its course below the 150 feet level. 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CRIPPLE CREEK CONSOLIDATED.—The following are extracts from the manager's report dated September 26: The shaft is down 90 feet, well timbered

METAL CIRCULARS.

Messrs. HENRY BATH and Son's Copper Report, dated October 17, says:—The Chili charters for the first half of October are advised as 650 tons. The latest exchange is 17½/4. With a moderate business doing each day the market has continued to give way until £46 15s. 9d. cash was touched on the 13th inst. £47 2s. 6d. being the three months price. Yesterday a large business was done and the price recovered rapidly from £46 15s. to £47 2s. 6d. cash, while three months was done up to £47 1s. 6d., the closing prices being £47 cash and £47 10s. three months. On the 7th inst. the Rio Tinto Copper Company (Limited) declared an interim dividend of 12s. per share, which is at the rate of 18 per cent. per annum, and the Anaconda Copper Mining Company one of \$125 per share, which is at the rate of 10 per cent. per annum. There is no change in the New York prices of Lute copper, it being quoted 10½ cents nominal. The shipments for the fortnight are advised as 4618 tons. The market has again been free from speculative influences, and prices have dropped in sympathy with the tone of depression which has been lately ruling so generally in commercial circles on account of political and financial uncertainties. The position of copper itself continues to improve. The supplies from the United States are still abnormally heavy, but the European consumption is on such a scale that it exceeds the total supplies, and steady imports have been made into public stocks to meet the demand. Taking the first nine months of the year we find the United States have increased their production to the extent of about 27,500 tons and their exports more than 43,000 tons during the same period. A revival of trade in America by curtailing the supplies would, therefore, very seriously affect the position in Europe, and the possibility of this will no doubt appeal ere long to those interested in the article. The arrivals and deliveries at Hamburg, Rotterdam and Antwerp during the past fortnight amount to about 1876 tons. The imports of American copper into England have been 2113 tons, and into France 355 tons, or 2498 tons against 535 tons a last year. Total actual deliveries for the fortnight have been 5397 tons against 5415 tons imports. The stocks have decreased 152 tons. Total visible supply shows 34,777 tons against 34,093 tons last fortnight. We have no transactions to report in furnace material.

England and France,	Imports,	D'liv'r's,	Stocks,	Afloat and Chartered for supply	Total visible
Chili copper at Liverpool, Swansea, and in France	752	819	24,935	2,400	27,335
Foreign copper in London, chiefly Australian and Japanese	609	545	1,759	1,250	3,009
American copper at Liverpool, London, and Swansea	2,053	2,025	1,769	—	1,769
Other copper at Liverpool and Swansea	1,476	1,653	693	—	638
Swedish copper at Liverpool and Swansea	85	25	875	—	875
English copper in France	355	430	277	—	277
American copper in France	85	100	121	—	121

Tons fine copper during the fortnight

Against tons on Oct. 2, 1893	5,401	5,394	31,589	3,500	34,084
Against tons on Sept. 17, 1892	5,401	4,943	31,059	5,700	36,263
1895.	1894.	1893.	1892.	1891.	
52,763	52,982	47,795	58,710	61,849	
£46 7/6	£40 10/3	£41 1/3	£46	£49 12/6	

Tons fine copper during the fortnight

1895.	1894.	1893.	1892.	1891.
52,763	52,982	47,795	58,710	61,849
£46 7/6	£40 10/3	£41 1/3	£46	£49 12/6

Imports from Chili and Bolivia from January 1 to date

17,735	17,159	16,393	15,397	15,631
1895.	1894.	1893.	1892.	1891.

Imports from America from January 1 to date

28,315	29,948	34,109	35,754	35,351
1895.	1894.	1893.	1892.	1891.

The shipments to Europe from America from January 1 to date are 97,381 tons as against 97,107 for corresponding period last year.

The shipments afloat from America are estimated at 2150 tons.

Stocks.—We estimate the present available quantities of West Coast copper to be:—

At Swansea.	Regulus.	Barr.	Ingots.	Barilla.
133	—	372	—	—
133	—	23,765	163	—
133	—	280	235	110
133	—	24,418	404	110

Tons fine copper.

representing about 25,182 tons on October 2, 1896

41,052	—	—	—	16,189
1895.	1894.	1893.	1892.	1891.

Supply of West Coast Copper may be estimated from the following figures

24,935	2,400	27,335	against 27,582 tons
1895.	1894.	1893.	1892.

Actual stocks at Swansea, Liverpool, and in France

24,935	2,400	27,335	against 27,582 tons
1895.	1894.	1893.	1892.

Against same date 1895, stock 41,052 afloat &c., 3150=44,202 tons

1894	1893	1892	1891	1890
35,283	33,702	33,702	33,702	33,702
1894	1893	1892	1891	1890

Quotations for West Coast copper are as follows:—

To-day.	Oct. 17.	Oct. 17.	Oct. 17.	Oct. 18.
1895.	1894.	1893.	1892.	1891.

Ores

9/10	9/10	7/8	8 1/4	8 1/10
1895.	1894.	1893.	1892.	1891.

Regulus

£47	£46 2/8	£40 18/3	£41 11/3	£46
1895.	1894.	1893.	1892.	1891.

Ingots, Urmenia

Nom.	Nom.	Nom.	£15 15	£19 15
1895.	1894.	1893.	1892.	1891.

Precipitate

about 9/6	about 9/7 1/2	about 8 1/4	about 8/9	9/3
1895.	1894.	1893.	1892.	1891.

For other descriptions we quote to-day.—Wallaroo nominal, Barra Barra nominal, best selected about £30 to £51, English tough about £40 10s. to £50 10s., English manufactured £57, India sheets about £55, G.B.M. copper £47 to £47 2s. 6d. cash, and £17 10s. to £17 12s

therefore at the rate of 47,545 tons per annum. The apparent consumption of the United States for the past nine months has been 13,70 tons less than during corresponding nine months of 1895. Stocks have decreased 162 tons, but the visible supply has increased 95 tons during the past fortnight. Imports to date are 20,022 tons, and deliveries 30,391 tons greater than last year. The arrivals in England and Havre for the fortnight have been 5225 tons, and the deliveries 5337 tons. The arrivals of Chili in Liverpool and Swansea have been 87 tons, and the deliveries 120 tons, and from other countries 3173 and 3225 tons respectively. The arrivals here and in Swansea from the United States have been 897 tons bar, 540 tons ingots, and 533 tons matte, equal to about 1733 tons fine, in London, 410 and in Havre 23 tons fine. The Chili charters for the past fortnight are advised as 550 tons and exchange 17½d. Quotations to day are Chili bars and good merchantable copper £17 2s. 6d. for cash, and £17 11s. 3d. for three months' prompt. English bars selected ingots £20 10s. to £21, and tough cake £20 10s. to £20 5s. per ton. Ore of 20 per cent. 9s. 1½d. Regulus and matte 9s. 4d. per unit.

Messrs. HARRINGTON and Co.'s Copper Report, dated Liverpool, October 16, 1896.—Chili. Charters for the past fortnight are advised as 550 tons, making the total since December 31 last 18,650 tons, against 18,350 tons same time last year. Exchange 17½d. Since our last issue about 10,400 tons G.M.B.'s have changed hands. The past fortnight, principally owing to outside influences, has been a most despondent one, and both consumers and speculators for a rise seem to have been holding aloof in the expectations of seeing lower prices, and which to a certain extent they have seen realized. On the 2nd instant values were £17 16s. 3d. cash and £18 1s. 3d. three months, and on the 5th instant, after opening steady at these rates, one of the large dealers came in and sold 450 tons three months in a line at £17 18s. 9d., this business being subsequently followed by further sales of forward, which we understand were made against purchases of copper in America, prices then receded to £17 6s. 3d. and £17 12s. 6d., gradually fell away until yesterday when down to £17 13s. 9d. and £17 1s. 3d. respectively were accepted. To-day, on the announcement of the fortnightly statistics showing a decrease, coupled with more favourable reports from America, the tone of the market suddenly changed for the better, and a good demand setting in fully 2000 tons G.M.B.'s were dealt with at up to £17 2s. 6d. cash and £17 11s. 3d. three months' prompt. We close firm at these rates. The feature of the fortnight has been the large quantity of copper "carried over," the charge for same has gradually advanced from 5s. to 10s., and this latter now looks like being exceeded, with the prospects of dearer money in view.

The following are the returns of the Copper Producers' Committee:—

	September.	August.	9 months, Jan. to Sept., 1896.	9 months, Jan. to Sept., 1895.
European Production	7,182	7,072	61,279	61,548 tons
American	16,977	16,803	151,752	124,077 "
Total	24,159	23,875	213,031	185,625 "

American Exports..... 10,988 .. 9,113 .. 89,221 .. 88,348
It will be noted from above figures that notwithstanding that this year's exports from America, as compared with last year, show an increase of 4,363 tons; the European consumption has not only absorbed this extra quantity, but during same period has reduced the stocks in England and France by 12,328 tons. As will also be seen below, the deliveries continue on a large scale. The total stocks in Liverpool, Swansea, London, and Havre are 30,417 tons, against 3,589 on the 1st inst., showing a decrease of 162 tons for the fortnight. The stocks include about 70 tons of copper sold, but not yet delivered to smelters, also 200 tons Chili bars and 91 tons Japanese ingots transferred from the Havre stocks. The visible supply for the fortnight is 34,234 tons, against 34,118 tons on the 1st inst., showing an increase of 95 tons. Refined and manufactured stores are steady, quotations being tough cake £27, best select £28 10s. to £29, Indian sheets £23 to £24, strong sheets £27, and yellow metal sheets 4½d. per pound. The only rate of furnace material reported is 210 tons Montana matte to arrive at 9s. 6d. per unit.

	Tons	Tons	
	due.	due.	
Imports of Chili copper during the past fortnight	647	against	1057 same time last year.
Delivery of Chili copper during the past fortnight	820	"	1022 "
Import of other copper during the past fortnight	3179	"	1873 "
Delivery of other copper during the past fortnight	2275	"	2269 "

The total imports of Chili and other copper into Liverpool and Swansea since January 1 have been 65,439 tons; deliveries during the same period 75,343 tons fine; for same time last year the figures were 53,171 and 52,622 respectively.

Quotations are:—

	To-day.	Oct. 1, 1896.
Chili bars	£17 2s. 6d. cash and £17 12s. 6d. 3 months	£17 18s. 3d. cash and £18 3 months
" ore	9s. 0d. to 9s. 8d.	9s. 0d. to 9s. 9d.
" regulus or matte	9s. 5d. to 9s. 9d.	9s. 5d. to 9s. 9d.
Precipitate	9s. 5d. to 9s. 9d.	9s. 5d. to 9s. 9d.

Arrivals here during the fortnight of West Coast S.A. produce:—

	Ores.	Regulus.	Bars.	Ingots.
Potosi (s.) from Chili	138	120	27	—
Antisana (s.)	138	120	27	—
Atterey (s.) from Havre	138	120	27	—

At Swansea—

	Ores.	Regulus.	Bars.	Ingots.
Antisana (s.) from Caldera	138	120	27	—
Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at:—	138	120	27	—

Liverpool

	Ores.	Regulus.	Bars.	Ingots.
Swansea	138	120	27	—
	138	120	27	—

	Tons	Tons	Price of cash bar
	fine.	fine.	Oct. 1, 1896.
Representing about 24,334 copper, against 24,507 Oct. 1, 1895.	24,334	24,507	£17 16s. 3d.
against	47,577	"	17,1895
"	35,916	"	17,1894
"	23,568	"	17,1893

Stock of other copper contained in matte, G.M.B. foreign ore, and Spanish precipitate, 3,247, against 3,343 Oct. 1, 1895.

	Tons	Tons	Price of cash bar
	fine.	fine.	Oct. 1, 1896.
Stock of Chili bars, ingots, and Barilla in Havre, including Housen and Dunkirk	1,072	"	47s
Stock of copper other than Chili in Havre and Dunkirk	1,002	"	42s
Stock of Chili copper afloat and chartered for to date	7,557	"	2,965
Stock of foreign copper in London	1,944	"	2,231

Tin.—Since our last the market for cash Straits has been irregular, and prices have fluctuated between £50 1s. 3d. and £58 5s., closing active to-day at £48 1s. 3d. Auctioned £38 10s., English £62, and Peruvian £18 to £25, according to quality.—Sulphate of copper. Makers price £16 5s. to £16 10s. spot and forward 1s. on during the past fortnight has been easier, and closes dull at £11 to £12 1s. 6d. for Spanish, and £11 5s. to £11 7s. 6d. for English.—Spelter. The market since our last has been easier, closing quiet at £6 10s. for ordinary Belgian brands.—Quicksilver. Since our last the market has been steady at £2 12s. per bottle for Spanish.—Bar silver. Prices have fluctuated between 55½d. and 57½d., closing to-day at 56½d. per ounce standard. Antimony. Star regulus at £23 10s. per ton. Ore irregular, about £3 for 50 per cent. good quality and produce. Bank rate of discount remains at 3 per cent.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes October 22:—The Mining Market is quiet, but shares are firmly held, with more confidence in the future of tin. Quotations:—Basset United (Limited), 15s. to 16s.; ditto (5s. paid), 4s. to 4s. 6d.; Blue Hills, ½ to ½; Carn Brea United (Limited), 1s. 6d. to 2s.; ditto (2s. 6d. paid), 2s. to 2s. 6d.; Devon Consols, 17s. 6d. to 18s. 6d.; Dolcoath (Limited), 16s. to 17s.; ditto (7s. 6d. paid), 6s. to 6s. 6d.; East Pool, ½ to ½; Killfret (Limited), 1s. 6d. to 2s.; Levant, 2 to 2½; West Kitty, 1½ to 2; Wheal Grenville, 4½ to 4½; Wheal Kitty, 4s. to 5s.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write October 22 (12 noon):—The movements during the past week have been very varied, and if we premise that the changes on balance in home rails are very irregular and for the most part small in amount—in Americans, Canadian, and Mexicans better without exception (though nowhere very distinctly so after fluctuations), also other markets mostly on the downward side, as will be seen from figures below—we think it better to simply give the daily changes as they have occurred. On Friday last markets generally were lower, mainly on Americans and Canadians, with home rails participating, save for North British, in which an exceptional rise took place. Here and there at best prices were just maintained in some home rails, however. Saturday, as usual, dull generally. Americans, however, improved generally, but fractionally. Monday was another idle day, with tendency to ease in home rails, but Americans were again slightly better. Nothing moving in Canadians and Mexicans. A bad day for South African mines, though latest figures as a rule were rather better than the worst. On Tuesday home rails, though changing hands a little, mark nothing of note in alteration in quotations. Americans and Canadians again better

on the whole, though business here desultory. Yesterday saw quite a change of tone throughout, nearly all market prices improving nearly (if not quite) all round. Mexican Railway issues were a feature, but other departments of rails, Americans (principally), Canadians, and home rails, all show distinct gains on latest figures. In mines, too, the South African department gained considerably in many instances, and the whole tone of the market was steadier and stronger. Home rail traffic fairly good. Up to noon to-day nothing to add to close last night, pending the announcement of the Bank rate. Changes in quotations given in detail hereunder:—

ENGLISH RAILS.—Higher: Great Eastern, ½ to ½; Great Western, ½; Midland, 1; North British, ½; Berwick, ½ to ½; Dover A, ½. Lower: Caledonians, 1; ditto Deferred, ½; Lancashire and Yorkshire, ½; Brighton A, ½; Chatham, 5-16; Sarat, ½; District, ½.

CANADIANS AND AMERICANS.—Higher: Atchison, ½; ditto Preference, 1½ to 1½; Trunk Ordinary, 1-16; ditto Guaranteed, ½ to ½; ditto First Preference, ½; ditto Second Preference, ½; ditto Third Preference, ½; Mexican Rail, 1½; ditto First Preference, 3½; ditto Second Preference, 1½; Milwaukee, 1 to 1½; Denver, ½; ditto Preference, ½ to ½; Louisville, ½; Missouri, ½; New York Central, ½; Erie, ½ to ½; Ontario, ½ to ½; Norfolk Preference, ½; Reading, ½; Union Pacific, ½ to ½.

CONSOLS.—Lower: Two and Three Quarter per Cent., 5-16. COLONIAL STOCKS, &c.—Higher: Natal Inscribed, 1.—Lower: Canada Registered, 1; New South Wales Inscribed, 1; New Zealand Inscribed, 1.

CORPORATION STOCKS AND DEBENTURES.—Higher: Manchester Three per Cent., 1.—Lower: Birmingham Three per Cent., 2; Blackburn Three per Cent., 4; Bristol Three and a Half per Cent., 1; Liverpool Three and a Half per Cent., 1.

FOREIGNERS.—Lower: Argentine Six per Cent., ½; ditto Five per Cent., 1; Brazilian Four and a Half per Cent., 2; ditto Four per Cent., 2½; Egyptian Unified, ½; Italian Rente, ½; Mexican Six per Cent., 1½; Russian Four per Cent., ½; Spanish Four per Cent., 2½; Turkish, ½.

BANKS.—Lower: Imperial Ottoman, ½; Manchester and Liverpool District, ½; National Provincial, ½.

INSURANCE.—Higher: Lancashire, ½; Union Marine, ½.—Lower: British and Foreign Marine, ½; Liverpool, London, and Globe, ½; London and Lancashire, ½; Maritime, 1-16; Royal, 1.

COAL, IRON, &c.—Higher: Cammells, ½; Ebbw Vale, 1-16; Parkgate Iron, ½.—Lower: Bolckow Vaughan (£20 paid), ½; Staveley A, ½; Tredegar A, ½.

TELEGRAPHS AND TELEPHONES.—Lower: Direct U.S. Cable, ½; Telegraph Consolidated, 1; West and Brazilian, Deferred, ½; West India and Panama, ½.

BREWERS.—Higher: Chester, ½; Snowell's, 2.—Lower: All-sopp's, 1; Guinness, 30; Tait's Pref., ½.

MISCELLANEOUS.—Higher: Blackpool Towers, 6d. to 1s.; Branner Mond, ½ to ½; Canard Steam, ½; Fowler Brothers, ½; Rylands and Sons, ½; West India and Pacific Steam, ½.—Lower: Bovril, 1-16 to ½; Coats, 1; Earle, ½; Henry's, 1-16; Sir J. Whitworth, ½.

LATER (4 P.M.).—Notwithstanding some affectation of opinion to the contrary, the advance (to 4 per cent.) in the Bank rate was fairly well anticipated, and the influence of the advance, whilst certainly a trifle worse, is still only a trifle in any direction.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (October 22), writes:—During the past week the markets have been unsettled. For the most part they have been depressed on the fears of dearer money, and sales to close accounts ascribed to Paris. When these sales are ended, and there is a better prospect of the Eastern Question being arranged, there should be a recovery, as trade reports continue good.

In shares of coal, iron, and steel companies prices are generally easier. Great Eastern Collieries are at 21s. 3d., Marbella 28s. 6d., Niddrie 39s., and Steel Company of Scotland 5 1-16.

In shares of copper concerns prices are also easier, although the market for the metal has improved. Arizona are at 50s., Central Chili 8s., Mount Lyell 7½, Tinto touched 23s., and Tharsis 113s. 6d., but are both now better.

In shares of gold and silver mines a fair amount of business has been done. East Rand declined to 95s., on a rumored new issue of shares at 4½, but have recovered to 58. Chartered also declined to 46s. 6d., and have recovered to 50s. It is said this company is likely to issue 50,000 new shares at the rate of one new share at £2 for five old shares. Consolidated Gold Fields touched 10 7-16 and Randfontein 42s. 3d., but are both now better. Bass and Flinders shares show a good advance on a favourable crushing. Nundydroog firm on dividend rumour. African Recovery are at 43s.

African Estates, 28s. 6d.; Afrikander, 25s.; Associated Southern, 26s. 3d.; Banijes, 53s. 9d.; Balkis, 4s. 9d.; Broken Hill, 48s. 9d.; Barrett, 11s. 6d.; Blackett's Claim, 6s. 3d.; Croydon Consols, 10s. 3d.; Caravel, 6d.; Charterland, 10s. 6d.; Consolidated Murchison, 8s. 9d.; East Hauraki, 2s.; East Nigel, 3s. 9d.; Eastleighs, 16s.; East Sheba Reef, 2s.; Emma, 1s. 6d.; Great Boulder No. 1, 20s.; Golden Link, 13s. 9d.; Golden Ridge, W. A., 1s. 3d.; prem.; Gold Estates of Australia, 36s. 3d.; Golden Crown, 32s.; Hannan's Leward, 22s. 6d.; Hainault, 30s.; Hit or Miss, 23s. 6d.; Hall Mines, 40s.; Hauraki, 16s.; Joker Yalgoo, 18s. 9d.; Lisbon, 5s.; La Reine d'O., 6s. 3d.; Lake View Extended, 20s.; Mount Charlotte, 21s.; New Queen, 7s.; North Boulder, 17s. 6d.; North Croydon, 3s. 9d.; New Steyn, 26s. 3d.; Oceana Development, 7s. 6d.; East Orion, 17s. 6d.; Pzger, 25s.; Pitbarra Gold Fields, 13s. 9d.; Pearl Central, 22s. 6d.; Prece's Point, 3s. 6d.; Port Phillip, 1s. 3d.; Rhodesia, 24s.; Sheba Queen, 6s.; South's Colonial Gold Fields, 12s. 9d.; South Lonsdale's Vlei, 1s. 3d.; Sherlaw's, 10s.; Umbli 6d.; United Gold Fields of Manica, 10s. 9d.; Violet, 18s. 9d.; West Australian Mining, 7s.; and White Feather Main Reef, 8s. 9d.

In shares of miscellaneous companies there is not much alteration to notice. In oil companies Broxburn are at 9½, Hermand 1s. 3d., Pumpherton 6s., and Young's 27s. 6d. Field's Candle Six per Cent. Preference are at 11½. Nobel's Explosives 18 1-16.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of October 22:—The railway market has been quiet during the past week, and changes in values have been moderate. Caledonian Deferred has fallen from 56 5-16 to 55½. Highland has advanced from 99½ to 101½; North British from 43½ to 43½. Debenture and Preference stocks have been offered at reduced prices. Dealings in bank and insurance shares have been limited. Bank of Scotland has declined from 354 to 351; North British and Mercantile Insurance from 37½ to 37½. Cowdenbeath Coal shares have improved from 17½ to 18; Steel Company of Scotland from 5 1-16 to 5 1-16. Niddrie and Benhar Coal have fallen from 39s. 6d. to 39s. Roswell Gas Coal, £10 paid, from 5 to 4½. Broxburn O.I. shares have advanced from 9 to 9½. Dalmeny from 16½ to 18. Oakbank Oil fully paid shares have declined from 6 to 5½. Young's Paraffin from 27s. 3d. to 27s. Arizona Copper have changed from 50s. 6d. to 50s. 9d. Rio Tinto from 24 to 24½. Tharsis from 116s. to 115s. Distillers have declined from 20½ to 20½. Prairie Cattle shares from 18s. 9d. to 17s. 3d., Bovril from 97s. 3d. to 90s. J and B. Coats from 61½ to 60½. Nobel's Dynamite Trust from 18 1-16 to 18 1-16.

THE IRON AND STEEL MARKETS.

Messrs. BARRY, HEAD, and Co.'s weekly report, 26, Lombard-street, E.C., October 21, state:—Prices: The figures mentioned in our report of last week are fully maintained. Yesterday's market at Middlebrough was animated in tone, prices were stiff, and makers not at all anxious to sell.—Prospects: You will notice that our various prognostications of higher prices and increased business have been amply fulfilled, and, in our opinion, we have not yet attained to all that may be expected.

MINING IN CORNWALL AND DEVON:

NOTES ON MINING IN THE WEST.
(FROM OUR OWN CORRESPONDENT.)

THE spirits of Cornish people generally have gone up 50 per cent on the prospect which has been suggested of a turn in the tin market, and although there is naturally a considerable element of doubt in the whole thing, the general impression seems to be that at any rate the bottom price has been touched, and that whatever more there may be can only be in one direction. The sharp rise at the end of last week caused no doubt excitement, and it would have only required a few days more to set things burning. But the advance was evidently too sharp, and the little reaction served to prevent any unjustified boom in Cornish shares. There is no question but that the speculative spirit so obtains in Cornwall that, with a very moderate rise in the mineral, business will again become brisk, and dealings as numerous as ever. It is significant, too, that holders who were offering a fortnight ago at very low prices have now withdrawn their offerings; and though there is very little open business, the probability is that there are good many more buyers about than sellers. There seems to be quite a renewal of confidence in tin, based on the fact of the small stock now in America, the diminution of supplies from the Straits, and the probability of an increase in consumption.

THE meeting of shareholders in East Pool on Monday renewed the interest in the unfortunate dispute between the company and the shareholders in the neighbouring mine of Wheal Agar, but the interest now is merely in the ultimate terms of settlement. The dispute has settled itself rather than been aided much by either of the executives: Agar leave out, and left them practically to the mercy of East Pool. Lord Roberts, we are now told, did offer the sett to Agar shareholders first, but they declined, and on it being then offered to East Pool they have accepted the responsibility of working it under a new lease. The only question now is as to the purchase, or otherwise, of the machinery. Lord Roberts can claim the whole at a valuation if he likes, but whatever he does claim will, of course, be only for the purpose of East Pool, and we are told that they do not contemplate taking much of it. For instance, we hear that they are not asking for the big pumping engine, which has been the big bone of contention. They are quite prepared to take the West Seton engine, of which they have the refusal, and put up there, and the lord will at that event have to call on Wheal Agar shareholders to remove their machinery and plant. At the present moment it looks as though Agar people allowed their opportunity to slip when they did not accept the definite offer of Mr. Lanyon of £4500. If they are going to get that amount now, it is difficult to see where it is coming from. Of the future policy of East Pool it is impossible to speak positively now, because the committee themselves have not decided on their course of action. There are two suggestions—one to convert into a Limited company, and the other to increase the present number of Cornish shares. The general feeling would certainly be in favour of the former course.

We are glad to see that what we have said more than once in regard to the attitude of the Mining Association and Institute of Cornwall in the present depression is to be called attention to, and by no less influential a gentleman than Mr. C. V. Thomas, whose individual efforts in the last 18 months have done more to keep the mining industry afloat than those of any half-a-dozen others in the county. Mr. C. V. Thomas has given notice of a resolution which really amounts to an ending of mending of the association. Mr. Thomas feels strongly, as we have pointed out, that the association might do much more than it has done, and is doing, for the practical advantage of mining. We have the greatest admiration for the association, which, more particularly in the matter of technical education, has done splendid work, and from its organisations have passed out some of the best experts which the mining world possesses, but the value of any institution must be gauged by its ability to meet a crisis, such as the industry with which it is associated is passing through. Some papers on mining subjects are of undoubted value, but they do not help the mines to obtain capital. What we should like to see would be a determined attempt on the part of the association by the collection and tabulation of statistics, to convince the outside public that the mining industry is worth developing. It is not for us to go into the details of such a scheme, but one which has been hinted at by influential people more than once, and although we have no reason for assuming so much, we have very little doubt but that that is what Mr. Thomas is raising the question for. The November meeting ought to be interesting.

It is said that the matters in dispute between Basset United and Mr. Fortescue, the part lord of West France, have not yet been arranged. In the interests of all parties it is to be hoped that a settlement will not long be delayed. Now that the East Pool and Wheal Agar deadlock is at an end, we do not want another long drawn out dispute to add to the difficulties from which the industry is suffering.

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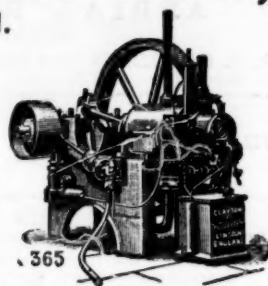
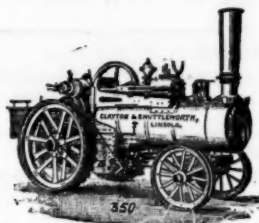
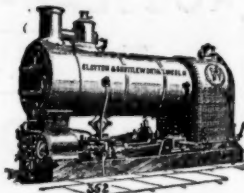
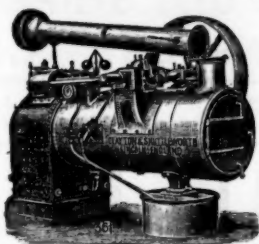
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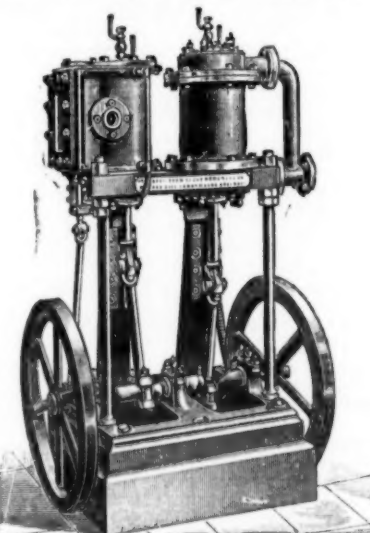
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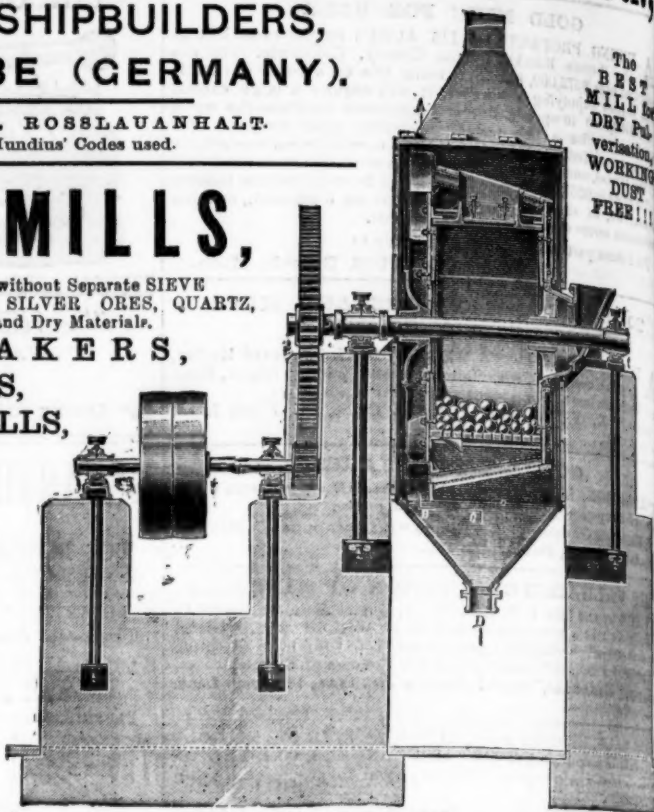
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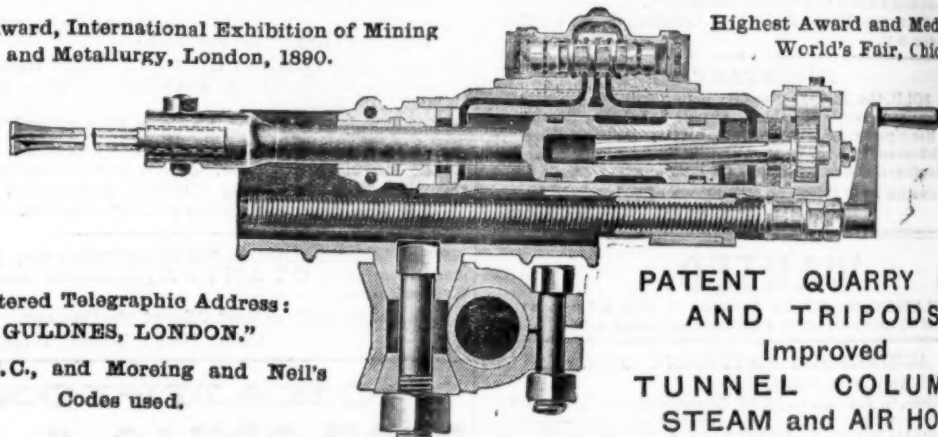


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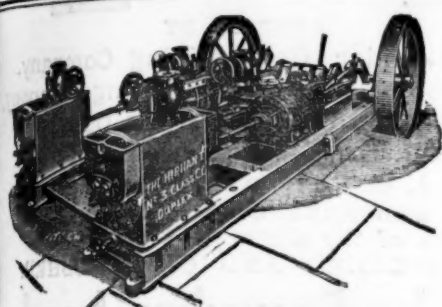
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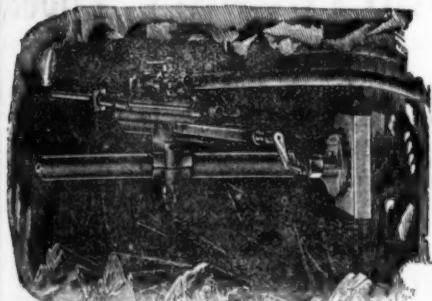
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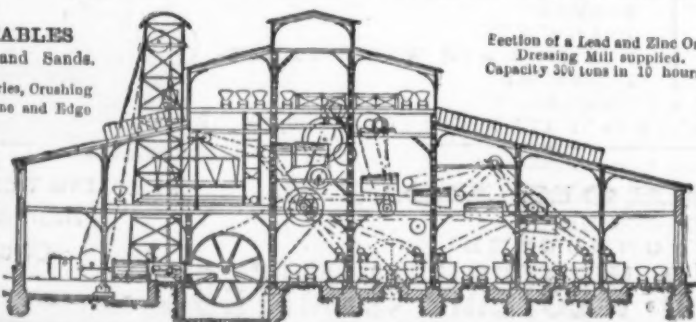
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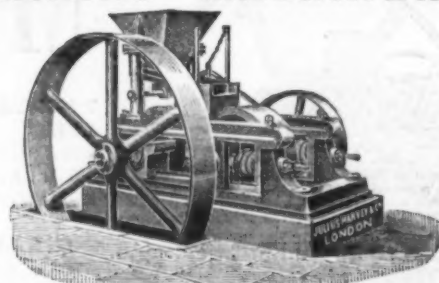
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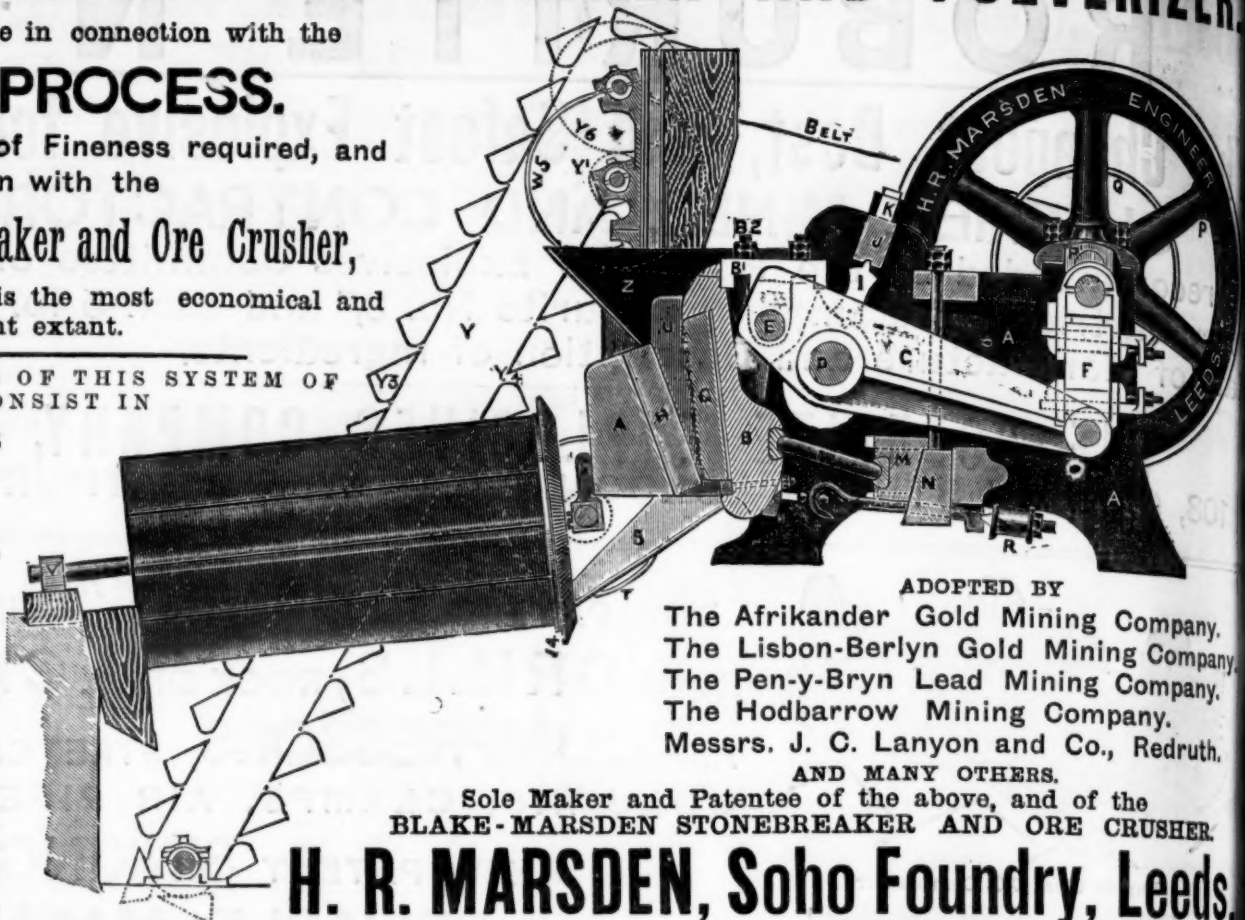
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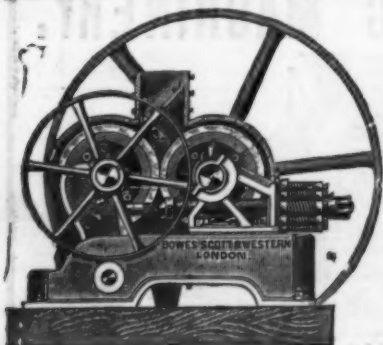
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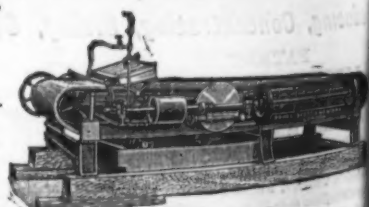
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